AIR FORCE MATERIEL COMMAND

LEADING EDGE

May 2002

Special Edition

Almanac

LEADING EDGE

Headquarters
Air Force Materiel Command
Wright-Patterson Air Force Base, Ohio

Commander
Gen. Lester Lyles

Director of Public Affairs
Col. Donna Pastor

Chief, Internal Communications
Maj. Michael Kelly

Executive Editor
Ms. Libby VanHook

Managing Editor
Ms. Estella Holmes

Associate Editor
Lt. Gailyn Whitman

Department of Defense Thomas Jefferson Awards
First Place, Magazine Format, 1996
Second Place, 1998, 1997, 1995

Air Force Media Awards
First Place, Magazine Format, 1998, 1997, 1996, 1995, 1994
Second Place, 2000, 1993, 1992
Third Place, 2001, 1999

This funded Air Force magazine is an authorized publication published monthly for the people of the Air Force Materiel Command. Contents of LEADING EDGE are not necessarily the official views of, or endorsed by, the U.S. Government, the Department of Defense or the Department of the Air Force. The editorial content is edited, prepared and provided by the Public Affairs Office of Headquarters Air Force Materiel Command, 4375 Chidlaw Rd., RM N152, Wright-Patterson AFB, Ohio 45433-5006. The magazine can be found on the Internet on AFMC/PA's home page: http://www.afmc-pub.wpafb.af.mil/HQ-AFMC/PA/leading_edge/index.htm. Photographs are official U.S. Air Force photos unless otherwise indicated. Distribution ratio is 8:1. For submission and writers' guidelines, contact the editor at the above address or DSN 787-7602 or (937)257-1203. Send e-mail to:
Elizabeth.VanHook@wpafb.af.mil

AFMC
AIR FORCE MATERIEL COMMAND

Contents

Volume 44 Number 5 May 2002

Front cover montage created by Air Force Media Services, the Pentagon

AFMC: Warfighter support top priority

Air Force Materiel Command people are accelerating depot operations, getting tomorrow's technology to today's warfighter and deploying more people than ever to support America's war on terrorism.

Despite all that, Air Force and command leaders say the weapons-developing machine still needs to work smarter and faster.

AFMC experts are reaching for that goal through Air Force transformation projects and initiatives.

Enterprise management, agile acquisition and spiral development — a way of providing technologies quicker and updating it as progress is made — are just a few of the steps AFMC experts are already taking.

Transformation

While the state of AFMC is strong and focused on supporting America's warfighters, Gen. Lester Lyles, AFMC commander, said transformation is critical to the command's future.

"If we're to continue providing world-class materiel support to our customers, we must clearly understand their changing requirements and periodically review how we do business," he said. "We must ensure our strategies, plans, policies, processes and organizations are in tune with our customers' changing needs."

To support the Air Force mission while improving cost efficiency, Gen. Lyles emphasized where AFMC is and where it's going in six key areas. Those areas are: people; expeditionary aerospace force support; innovation; modernization; information management; and infrastructure.

People

"People are our most valuable resource and the key to AFMC's future," Gen. Lyles said.

"EAF support, innovation and modernization are the primary challenges facing AFMC as we transform the Air Force into the aerospace force of 2020. Information management and infrastructure are the foundations for meeting the challenges of the 2020 transformation and for enabling our people to excel. This vision of the future, in concert with doctrine, strategic planning and other dimensions of managing change, will help us create the future AFMC that most benefits our nation."

Two airmen from an E-3B Sentry airborne warning and control system, or AWACS, crew prepare the aircraft for a mission at an operating location in support of Operation Enduring Freedom. During Operation Desert Storm, E-3s flew more than 400 missions and logged more than 5,000 hours of on-station time. They provided radar surveillance and control to more than 120,000 coalition sorties. The Electronic Systems Center, Hanscom AFB, Mass., manages the AWACS program. (U.S. Air Force photo by Tech. Sgt. Marlin Zimemrman)

AFMC's people constitute a workforce of more than 80,000 military officers, enlisted members and civil servants who specialize in science and technology; test and evaluation; acquisition; logistics financial management; contracting; and many other career fields.

But while this experienced workforce transforms tomorrow's technologies into today's capabilities, it's also battling the fact that a large percentage of its civilian employees will be eligible to retire by 2010. To arm themselves for this fight, command officials are reshaping the workforce, with emphasis on recruiting people — military and civilian alike — with high-tech skills. Additionally officials are expanding the command's commitment to education and training.

"If the Air Force is to meet 21st century challenges, including asymmetric threats, we must rely on overwhelming technological leadership and an ability to respond quickly to the demands of a rapidly changing world," Gen. Lyles said.

"It's these talented people who will provide a steady infusion of new technology to our warfighters."

Innovation

In addition to working toward having a workforce that's more diverse, skills balanced and technically-savvy, AFMC is looking to experiment more with alternative organizational structures. Enterprise management, for example, give's a single person, typically an AFMC center commander, the ability to link broad and common issues across different programs and tap into expertise wherever it resides.

Maj. Gen. Mike Weidemer, AFMC requirements director, said "This enterprise initiative will accelerate the use of our knowledge management systems and accelerate the investigations into cross-cutting initiatives and cross-cutting requirements our warfighters demand, which we didn't have enough horsepower to fix previously."

Empowered employees using intelligent systems will be the norm for the future AFMC, along with task forces and "virtual organizations" linked electronically becoming the standard operating mode.

Additional functions will be contracted out, but AFMC will maintain a large "in-house" capability to address the technological and logistical challenges of 2020.

Modernization

Command officials expect advances in science and technology as well as information management to help reduce the deployed forces' logistics footprint by 50 percent or more. Enhanced depot maintenance processes, capabilities and utilization will improve responsiveness to operational requirements.

Today AFMC's science and technology community "pushes" the latest advances to the operators through advanced technology demonstrations.

Col. Thomas Di Nino, AFMC acquisition support division chief, said "What happened Sept. 11 caused us to take a more focused look at what we in AFMC do and also provided us a very good reason why our role in the Air Force is critical."

During the Persian Gulf War, AFMC officials took the E-8 Joint STARS aircraft out of its test phase and made it available for battle.

An F-15 Eagle from the 416th Flight Test Squadron at Edwards AFB, Calif., trails a B-1 bomber from the base's 419th FLTS. The fighter jet, carrying an aerial photographer and several rolls of high-speed motion picture film, was chasing the B-1 to capture images of a March 27 test mission over Edwards' airspace. (Photo by Mr. Thomas Pitsor, AFFTC)

Col. Di Nino said this paid great dividends in the Air Force's immediate combat capability. It helped win the war and also focused attention on the command's contribution.

During the war on terrorism, Air Force officials are taking this same approach with Predator and Global Hawk unmanned aerial vehicles, with both proving successful.

"If we don't provide tools our warfighters can use when they need it, we're not playing as part of the team in helping this country," Col. Di Nino said.

AFMC provides a full spectrum of support for a wide range of weapon systems. Realizing the older systems will be operated for years to come, AFMC developed an aging aircraft initiative to make sure these systems remain viable and updated.

Likewise, to better prepare itself for new systems, AFMC has expanded its modernization planning efforts and is working with the operational commands to evaluate new requirements, officials said.

Information management

In the world of information management, AFMC is replacing legacy information systems with web-based capability, said Mr. Ken Percell, AFMC's new chief technology officer. Increasing demand for information is driving the command's continually upgraded information technology infrastructure.

An e-business approach to improve customer support and feedback is in AFMC's future. We are looking to establish a secure, wireless IT infrastructure across the command. Global reachback capability to critical AFMC information systems will contribute to achieving global vigilance, reach and power," said Mr. Percell.

Infrastructure

AFMC's infrastructure (facilities, housing, utilities, acreage, and information systems) is also particularly critical to many mission areas and significantly impacts people's quality of life.

However, historically inadequate facility recapitalization funding has placed AFMC on a 250-year replacement cycle, compared to the industry standard of 50 years.

Vision

Gen. Lyles said, "AFMC Vision 2020 will be our roadmap as we strive to meet the goals of Full Spectrum Dominance described in Joint Vision 2020 and Global Vigilance, Reach and Power described in Air Force Vision 2020."

"Our command vision, 'The recognized leader for equipping and supporting America's aerospace force — the warfighter's first choice' will become our future reality as we focus our planning on people, EAF support, innovation, modernization, information management and infrastructure," he said.

— Tech. Sgt. Carl Norman, AFMC Public Affairs

AFMC transformation crucial to Air Force combat capability

Gen. Lester Lyles
AFMC Commander

It is said that the one constant in life is change. Organizations and people either adapt to changing environments and move forward, or they become ineffective. We are part of the most potent combat force history has known. But, history has also shown us that no country may rest on its laurels.

The United States faces a world that has changed dramatically in recent years. There are new global threats to our national security. Many of these threats come from people and organizations outside formal states, people willing to use weapons of terror to achieve their ends.

Technology has increased the flow of information and access to destructive weapons. The pace of change is staggering. If there was any doubt the world has changed, that reality hit home during last September's terrorist attacks.

Transformation underway

The Defense Department is meeting these new challenges with an ambitious effort to transform its organizations and processes. This transformation will ensure America's military forces continue to effectively secure our nation.

Despite an unprecedented war against terrorism on two fronts, the DoD is committed to this effort. If we do not rapidly transform, our leaders have warned that we risk losing the next war. This is an imperative none of us can afford to ignore!

Transformation is not a downsizing drill. It is a way of thinking and reacting in new ways.

Gen. Lester Lyles, AFMC commander

Our Air Force is joined in the military's effort to **transform**. We seek to create for ourselves a significantly greater — or asymmetric — advantage over potential adversaries. Achieving this will take new operational concepts and advances in technology. It will also require changes in our organizational structure and business practices. All of these efforts are under way, in every Air Force command including our own.

AFMC vision

My VISION for Air Force Materiel Command is to be the Air Force's first choice for solutions. We must be recognized as **"world class"** in all our operations. We must be innovative and proactive, effective and efficient. We must be consistently responsive to warfighter needs.

Using an integrated approach, we will seek quick results from some leading programs — called "pathfinders" — while transforming overall processes that will benefit all of us long-term.

AFMC's role in the overall **Air Force transformation** is absolutely pivotal. Through our mission of providing warfighting capabilities, our command integrates the Air Force's operational and business transformations. There is no way the Air Force can successfully transform without considering the technology, acquisition and sustainment support that we provide.

Supporting the warfighter

This command is no stranger to transformation. Over the years, our goal of providing the warfighter with combat capability has remained constant.

However, our organizations, our processes and our technologies have frequently changed. Today's transformation is a steep new path on our journey, one on which we are already embarked. The pace will be rapid and the changes radical. Expect the effects to be far-reaching.

Working closely with Air Force leadership, we are transforming our acquisition and sustainment practices to meet today's demanding environment. This will take increasingly agile acquisition processes. It will mean closer alignment of developmental and operational testing. It will also require making our depots as efficient as the best depot maintenance repair organizations in the commercial sector.

Enterprise management

One AFMC initiative embraced by Air Force leadership and warfighters alike is enterprise management. This puts a single person in charge of a system of systems, leading to better development decisions and making it easier for customers to get solutions from a single point of contact. Enterprise management shatters information stovepipes. It dovetails perfectly with agile acquisition and other transformation efforts.

We have been challenged to cut cycle acquisition time — the period it takes to go from identifying the requirements to fielding a system or capability — by three quarters. A four-to-one cycle time reduction will not be easy. It will take major increases in productivity and decreases in workload. We may need to divest ourselves of some low-payoff programs. Other prerequisites, such as the need for more stability in funding, may require support all the way to Congress.

Spiral development

The key to a more responsive acquisition system is adopting a process of spiral development. This incremental approach to developing weapons systems produces improvements in stages.

Besides delivering capability to the warfighter more rapidly, it allows for course corrections at each stage to improve the final product. This will enable us to deliver 21st century weapons to counter our 21st century threats.

We cannot achieve this independently! Everything we do, in the science and technology, sustainment and acquisition arenas, we do for the warfighter — but we cannot do any of it *without* the warfighter.

Spiral development also means spiral requirements. The warfighter must work with us to ensure we understand and interpret requirements appropriately. We must share information on science and technology and which applications are feasible.

We must also play in the development of Air Force doctrine and in wargaming. Success demands a collaborative team effort between equal partners. We are warriors supporting warriors!

To help guide us through this transformation, I have chartered a team that will formally stand up in May. It will be staffed with some of our best and brightest. They will have free rein to "think out of the box" and to develop ideas to improve the way we do business. We may not be able to implement all ideas, but we'll certainly gain a new perspective. In the interim, a working group and a transition team drawn from my headquarters staff have spent months laying the groundwork for our transformation.

Tools for success

An equally important part of our transformation is to make life better for AFMC members. While there will be some organizational changes and many process changes ahead, I do not expect any of them to result in a loss of jobs.

Transformation is not a downsizing drill! It is a way of thinking and reacting in new ways. It is a means to inject radical improvements in the way we do business. It is about freeing talented people to use innovation and good ideas every day in working their programs.

What I expect is that AFMC employees will be able to perform their duties in a more challenging, stimulating environment. I want to make sure that we are giving people the tools and opportunities to be more successful in the future, professionally and personally.

We will provide more opportunities for education and training. We will seek to relieve some of the burdens we have imposed upon people in terms of regulations and restrictions. Our transformed processes should mean fewer obstacles as individuals execute their missions.

I am very proud of the work each of you does on a daily basis! Together, you power the Air Force by providing combat capability.

Like your predecessors, you have created and sustained the tools for warfighter success in recent conflicts as well as today's Operations Enduring Freedom and Noble Eagle. I hear how much you are appreciated constantly from the people you support.

It's up to you

But, now is not the time to rest on our laurels. Each of us must evolve with the global environment to meet the demands of future conflicts. We must make the cultural changes required to be successful. We must continue to deliver tomorrow's technologies in today's weapon systems, faster, cheaper and better.

What I do ultimately matters less than what each of you do. I expect you to tell your leaders and me what is needed to improve every facet of our operations. This transformation encompasses every aspect of our mission, from science and technology, through acquisition and test, to sustainment. It will also impact our enabling support processes. Let us know how we can help you better accomplish your jobs. We cannot transform without you!

Ours is an organization with a long history of successful adaptation to change, and I am confident that AFMC's people are up to the challenge.

The threat is real. The imperative is urgent. While many questions remain, our course is charted. Today's ambitious effort to transform will yield new improvements to the combat capability that America's warfighters rely on. **I am excited about the opportunities ahead, and I urge you to share that enthusiasm — or at least to keep an open mind. Our Air Force and our nation depend upon it!**

AFMC leads the way in warfighter support

Bright Star, the largest and most significant coalition military exercise conducted biennially by U.S. forces, had a new lead partner this year — Air Force Materiel Command.

This first for AFMC reflects the command's commitment to the AEF concept and its willingness to support the warfighting commands by taking on most of the Air Force's deployment responsibility for this key exercise, said Gen. Lester Lyles, AFMC Commander.

Key positions

The command's people made up nearly 25 percent of the total personnel assets assigned to the 75th Aerospace Expeditionary Group and filled nearly every key officer and senior NCO position, he said. This included the expeditionary group's commander, deputy commander, senior enlisted advisor and five of nine squadron commanders. AFMC's enlisted personnel also filled 10 of 16 top senior NCOIC positions.

This is the first time Air Force Material Command has participated as the lead group in an exercise of this magnitude, according to the general.

Command wide support

Bright Star 01/02, the 11th in a series of coalition-building exercises, took place Oct. 8 through Nov. 1, 2001 with support coming from across the command's installations.

The following AFMC bases provided personnel to the operation: Hill AFB, Utah (105); Eglin AFB, Fla. (45); Tinker AFB, Okla. (23); Wright-Patterson AFB, Ohio (22); Edwards AFB, Calif. (8); Robins AFB, Ga. (6); Kirtland AFB, N.M. (5); Brooks AFB, Texas (2); and Hanscom AFB, Mass. (1).

Setting records

The 75th AEG's two air bases supported more than 3,500 joint personnel with a 40 percent smaller base operating support footprint than any previous operation of this size and set a record by bringing up an operational bare base, dubed HARVEST FALCON, within 12 days of arrival of the first equipment convoy. All this happened while under force protection condition-Delta following the Sept. 11 attacks in New York and Washington, D.C.

Lt. Gen. Michael DeLong (USMC), Deputy Commander-In-Chief U.S. Central Command and Bright Star Coalition Forces Commander, praised AFMC's efforts as "one of the finest operations in the most demanding of conditions that I've seen in my career — you have an outstanding organization here."

U.S. Embassy officials in Egypt said the 75th AEG provided unparalleled base operating support, flying operations and coalition support to 3,500 joint forces at three operating locations, in the largest coalition exercise ever conducted involving 38 countries and over 71,000 troops.

— Maj. Michael Kelly, AFMC Public Affairs

Labor pact strengthens partnership

The commander of the Air Force's largest civilian workforce and the union council president representing them signed a new master labor agreement March 21 at Wright-Patterson Air Force Base, Ohio, cementing the fruits of a newly formed labor-management partnership.

Gen. Lester Lyles, Air Force Materiel Command commander, and Mr. Scott Blanch, American Federation of Government Employees Council 214 president, signed the agreement.

Thumbs up

The 35,000-plus civilian AFGE Council 214 employees ratified the contract Jan. 11. The contract then went through a mandatory Defense Department statutory review and received the thumbs-up Feb. 28, said Mr. Ray Rush, AFMC labor and employee management relations chief.

The master labor agreement is the contract between AFGE Council 214 and AFMC. It governs matters affecting bargaining unit employees' working conditions, including use of official time for union representatives. Since AFMC employs 51 percent of Air Force civilian employees, it's the only major command with union recognition at the command level. Union negotiations are conducted at the local activity level in all others.

Forging ahead

It took AFMC negotiators only six weeks to finalize the new agreement and present it to union members for ratification, according to Mr. Jim Barone, AFMC personnel director and management's chief negotiator. He said speeding up the process was a product of AFMC and AFGE's commitment to a strong partnership.

Partnership

The partnership Mr. Barone referred to is a Partnership Council formed in June 1999 between AFMC and AFGE Council 214. Gen. Lyles and AFGE national president Mr. Bobby Harnage met in May 2001. Their discussion centered on building strong ties through active partnership councils at the command and base levels.

Mr. Barone said the Partnership Council, with the support of Gen. Lyles and Mr. Harnage, focused on a new approach in negotiating this agreement.

Mr. Barone said command officials wanted a member of senior management in charge to actually lead the negotiations. He said officials recognized that things would not get done efficiently if there were too many people in the room. So, they narrowed the number to an even dozen — six from AFMC management and six from labor.

In addition they decided they weren't going to overhaul the agreement.

"It was a good framework to start from," Mr. Barone said. In all, only 18 of the MLA's 39 articles were modified or rewritten. Another significant action resulting from the partnership was developing partnership principles — "how we want to deal with one another — trust and respect one another," said Mr. Barone. With that commitment and focus, negotiators forged ahead, deciding to use interest-based bargaining versus traditional negotiation. This put-all-your-cards-on-the-table approach ultimately saved a lot of time.

Building trust

"If you don't have trust, interest-based bargaining isn't going to work because you're putting all your cards on the table and not holding back," Mr. Barone said. "You're committing that when you have an agreement on one part, you put it to bed and don't reopen it unless we have mutual agreement to do so.The partnership council helped build that trust and that's what we operated under. The partnership council gave us a personal awareness of one another and we developed trust by working together in that." That trust is something Gen. Lyles said he's pleased to see.

Communication

"It all gets back to my basic premise of open communication — treating everyone the same, being willing to listen to all sides of an argument and not just assuming either the bargaining unit or the government is right or wrong in any particular case," Gen. Lyles said. "When you have the opportunity to sit and freely discuss things, eventually a solution or compromise is found and everyone is happy."

Mr. Scott Blanch, Council 214 president agrees, saying union bargaining team members had good, open discussion and have a solid understanding of what the contract means. "We were successful because of the way both teams approached this," Mr. Barone said. "I think we've demonstrated that you can achieve a lot more through partnership than you can through adversarial relationships."

Officials emphasized that working together creates and sustains an environment that takes care of AFMC people so they, in turn, can accomplish the AFMC mission.

— Tech. Sgt. Carl Norman, AFMC Public Affairs

Mr. Scott Blanch, AFGE Council 214 president (on left) and Gen. Lester Lyles, AFMC commander, sign a new master labor agreement during ceremonies March 21 at Wright-Patterson AFB, Ohio

Appraisal, grievance systems highlight AFMC-union agreement

A new pass-fail appraisal system and improvements to the civilian grievance process highlight the master labor agreement that became effective April 1 between the Air Force's largest group of civilian employees and Air Force Materiel Command management.

Although the new pass-fail appraisal system begins with the master labor agreement implementation April 1, it actually impacts appraisals required in the Spring of 2003, said Mr. Raymond Rush, AFMC labor and employee management relations chief. He said employees having appraisals submitted in the current cycle will be completed under the old system.

Pass or fail

The new civilian appraisal system is a two-tier system that brings AFMC's employees in line with most Air Force civilian employees. The systems calls for ratings of either pass or fail — no others.

"The new system requires feedback like the old system did and it requires documentation, but command leaders think it's a more efficient system than the one being used now," said Mr. Jim Barone, AFMC's personnel director. "The new system provides command employees feedback much like what's used on the military side of the house. Supervisors will provide this feedback to their employees at least once during an appraisal year."

AFMC employees, such as Mr. Bill Williams, an aircraft mechanic at Hill AFB, Utah, are going to be rated by a new pass-fail appraisal system effective April 1 under the new master labor agreement. Here, Mr. Williams is assembling an F-15 main landing gear unit. (OO-ALC photo)

Improving awards

Along with the improved feedback, Mr. Barone said the appraisal process opens the door to an improved awards program.

"If you review the MLA, you'll see we've kept an awards program related to appraisals that's almost identical to what we have today because we didn't have a better mousetrap to offer," he said. "But quite frankly, local commanders can negotiate an awards program at the local level so their top performing people can have more significant and timely awards that don't need to be related to the appraisal process."

Mr. Barone said this was one of the negotiating team's toughest issues. But he said everyone was interested in top performers getting significant and timely recognition throughout the course of the year.

"What we need to do now is capitalize on the flexibility this MLA offers and use our management-union partnership process to develop a better awards program," he said. "Then we'll have reaped the full benefits of the new appraisal system."

Grievances

The employee grievance process was another MLA improvement area. Mr. Barone said negotiators provided for more effective review in the second step.

He explained that in the first step of a grievance, the employee receives an answer from a designated management official. If the employee wants to appeal that decision, the second step is usually dealing with a branch or division director in the field.

"In some cases there really wasn't a meeting. The field director would just look at the package and say I agree with the first level and that was it," he said. "Now we've indicated if you want to have a meeting to discuss it, you'll have a meeting. And if management is not timely, the issue can be elevated."

Mr. Barone said this improvement should result in more effective and timely grievance resolution. Additionally, AFMC management is now encouraging employees to use alternative dispute resolution methods, which he said, is "really important to our management-union partnership."

"To get people to work out their differences without going through a formal grievance often results in a better solution and airing of the issues," Mr. Barone said. "Sometimes the grievance is only the tip of the iceberg. Getting people together with a facilitator many times will not only remove the problem but create a much better working relationship between supervisor and employee."

For more information on the new appraisal system and improved grievance process, call your base civilian personnel office.

— Tech. Sgt. Carl Norman, AFMC Public Affairs

AFMC standing strong in war on terror

Air Force Materiel Command people are standing shoulder to shoulder with America's warfighters in this war on terrorism and making sure they have everything they need to get their job done.

The effort is paying off. In the words of Gen. Gregory Martin, U.S. Air Forces Europe commander, AFMC has been "engaged, responsive and forward thinking in its support to the warfighter."

As the Air Force's most diverse command continues to provide critical capabilities used in America's war on terror, Mr. Ed Konys, Air Force Materiel Command Plans and Programs Directorate, is a firm believer the state of the command is strong and true.

"Attacks on the World Trade Center and Pentagon Sept. 11 gave Air Force and AFMC people a renewed sense of purpose," Mr. Konys said. "When the President said we're going to war, we're going to take on the terrorists, we recognized we're working harder to meet the national agenda."

Since its birth in 1992, AFMC has been developing, acquiring and sustaining the aerospace power needed to defend the United States and its interests. Now, with recent events as added focus and urgency, command leaders are focusing more sharply on the command's vision of being "the recognized leader for equipping and supporting America's aerospace force — the warfighter's first choice."

But AFMC's mission goes beyond equipping the war fighting commands, Mr. Konys said. AFMC is part of the action and pulling its load supporting the Air Force's expeditionary force concept. AFMC people showed their warfighter spirit when they headed the initial set up and oversight for the Bright Star exercise in Egypt earlier this year.

In America's war on terrorism, AFMC has deployed more people than ever before; is developing new ways to make more engine spares available to keep America's warfighting aircraft flying; reducing mission capable hours so critical parts arrive at their destination quicker; accelerating technology through the acquisition process so the warfighter has the best technology available today; and putting physical and high-tech security at the forefront of everyone's minds.

Top: Master Sgt. Gregory King from the 445th Aircraft Generation Squadron, Wright-Patterson AFB, Ohio, removes the engine covering doors on a C-141B Starlifter before swapping engines. (Air Force photo by Staff Sgt. Ken Bergmann) Bottom left: Senior Airman Shelby Kervin, a security forces specialist from the 507th Security Forces Squadron at Tinker AFB, Okla., verifies a driver's identification. (Air Force photo by Staff Sgt. Steve Cline) Bottom right: Tech. Sgt. Jay Huey, a reservist from the 95th Security Forces Squadron at Edwards AFB, Calif., stands ready at the M-160 machine gun mounted atop a HUMVEE at the Edwards South Gate. Sgt. Huey is one of more than 50 activated reservistists serving at Edwards in support of Operation Noble Eagle. (Air Force photo by Master Sgt. Stefanie Doner)

AFMC's deployed troop count has more than tripled since the September attacks, said Lt. Col. Thomas Fritz, AFMC operations office chief. To help fill the gaps, some 800 individual mobilization augmentees, or IMAs, around the command have been called to active duty as part of a presidential call up.

With American fighter and support aircraft patrolling no fly zones in Iraq and flying air interdiction flights over Afghanistan, Col. Fritz said. AFMC people are pushing items out to depots, accelerating maintenance and moving critical items like munitions more than ever.

— Tech. Sgt. Carl Norman, AFMC Public Affairs

AFMC Leadership

Commanders on the move

Maj. Gen. Michael Kostelnik

Maj. Gen. Michael Kostelnik, Commander Air Armament Center, Eglin Air Force Base, Fla., retired effective Dec. 2001.

Maj. Gen. Robert Chedister

Brig. Gen. Robert Chedister to AAC Commander from Program Executive Officer Airlift Trainers & Modeling & Simulation Headquarters U.S. Air Force, Washington, D.C.

Lt. Gen. Robert Raggio

Lt. Gen. Robert Raggio, Commander Aeronautical Systems Center, Wright-Patterson AFB, Ohio, retired effective June 2001.

Lt. Gen. Richard Reynolds

Lt. Gen. Richard Reynolds, from Commander Air Force Flight Test Center, Edwards AFB, Calif., to Aeronautical Systems Center Commander at Wright-Patterson AFB.

Maj. Gen. Wilbert (Doug) Pearson Jr.

Maj. Gen. Wilbert (Doug) Pearson Jr., from Director of Operations, Headquarters Air Force Materiel Command to AFFTC Commander at Edwards AFB.

Col. Michael Heil

Col. Michael Heil, from Commander Arnold AFB, Tenn., to Commandant Air Force Institute of Technology at Wright-Patterson AFB.

Col. David Eichhorn

Col. David Eichhorn, from Commander 46th Test Wing, Eglin, to Commander, Arnold Engineering Development Center, Arnold AFB.

Col. Reed Roberts

Col. Reed Roberts, from Commander Aerospace Maintenance and Regeneration Center, Davis-Monthan AFB, Ariz., to Commander 92nd Logistics Group, Fairchild AFB, Wash.

Col. Kenneth Lewandowski

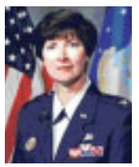
Col. Kenneth Lewandowski, from Director F-16 Management Directorate, Ogden ALC, Hill AFB, Utah, to Commander AMARC at Davis-Monthan AFB.

Maj. Gen. Claude Bolton

Maj. Gen. Claude Bolton, Commander Air Force Security Assistance Center, Wright-Patterson, retired effective Jan. 2002.

Brig Gen. Jeffrey Riemer

Brig. Gen. Jeffrey Reimer, from Program Executive Officer Command & Control & Combat Support Systems at the Pentagon, to Commander AFSAC at Wright-Patterson.



Brig. Gen.(Select) Jan Eakle

Brig. Gen. (Select) Jan Eakle, from Commander 377th ABW, Kirtland AFB, N.M., to Vice Commander Ogden ALC, Jan. 2002.

Col. Kathleen Close

Col. Kathleen Close, from AFMC Inspector General, Wright-Patterson, to Commander 377th ABW, Kirtland.

Maj. Gen. Dennis Haines

Maj. Gen. Dennis Haines, Commander Warner-Robins ALC, Robins AFB, Ga., retired effective Feb. 2002.

Maj. Gen. Donald Wetekam

Maj. Gen. Donald Wetekam, Director, Maintenance and Logistics, Headquarters Air Combat Command, Langley AFB, Va., to Commander WR-ALC.

Lt. Gen. Leslie Kenne

Lt. Gen. Leslie Kenne, Commander Electronic Systems Center, Hanscom AFB, Ma., to Deputy Chief of Staff Warfighter Integration 2002.

Lt. Gen. (Select) William Looney III

Lt. Gen. (Select) William Looney III, from Commander, 14th Air Force and Component Commander, Space Air Forces, U.S. Space Command, Vandenberg AFB, Calif., to ESC Commander.

AFMC Leadership triad

Gen. Lester Lyles
AFMC Commander

Lt. Gen. Charles Coolidge
AFMC Vice Commander

Dr. J. Daniel Stewart
AFMC Executive Director

Base listings are followed in bold type by the primary AFMC organization, the host unit. Other AFMC organizations with headquarters elsewhere, but which have people assigned to the base, are listed following the host unit.

Figures in the tables are for assigned personnel, a term for the actual number of people on the job. This is not the same as manpower authorizations, a term for the total number of positions with approved funding.

Figures are current as of Feb. 28, 2002.

AVERAGE AGE

Officers	34
Enlisted	29
Civilian	47

GENDER	MALE	FEMALE
Officers	80.8%	19.2%
Enlisted	78.9%	26.8%
Civilian	66.3%	33.6%

EDUCATION	
High school+	36%
Bachelors	32%
Masters	12%
Doctorate	13%
Other	.05%

BASE	OFFICER	ENLISTED	CIVILIAN	TOTAL
ARNOLD AFB, Tenn.				
Arnold Engineering Development Center	58	45	179	282
Contractors				2,723
BROOKS AFB, Texas				
311th Human System Wing	102	306	611	1,019
Aeronautical Systems Center	345	645	749	1,739
Air Force Research Laboratory	43	48	103	194
EDWARDS AFB, Calif.				
Air Force Flight Test Center	569	2,876	2,646	6,091
Warner Robins Air Logistics Center	3	7		10
Air Force Research Laboratory	28	31	150	209
Aeronautical Systems Center		30		30
EGLIN AFB, Fla.				
Air Armament Center	763	3,765	2,653	7,181
Air Force Research Laboratory	56	13	254	323
Aeronautical Systems Center	4		3	7
Electronic Systems Center Hanscom	1	1		2
HQ AFMC	7	5		12
Arnold Engineering Development Center		1		1
HANSCOM AFB, Mass.				
Electronic System Center	770	572	1180	2,522
Air Force Research Laboratory	104	52	277	433
Air Armament Center	3	1	3	7
HILL AFB, Utah				
Ogden Air Logistics Center	452	1,842	9,136	11,430
Air Force Research Laboratory	4			4
Electronic Systems Center	4	2		6
KIRTLAND AFB, N.M.				
377th Air Base Wing	180	955	608	1,743
Air Force Research Laboratory	206	71	569	846
BASE (Kirtland cont.)				
Aeronautical Systems Center	41	4		45
Air Armament Center	191	1,093	639	1,923
Air Force Flight Test Center	1	46	1	48
Electronic System Center	1			1
HQ AFMC	9	9		18
ROBINS AFB, Ga.				
Warner Robins Air Logistics Center	399	1,734	10,432	12,565
Air Force Research Laboratory	1	1	4	6
Air Force Flight Test Center	1			1
TINKER AFB, Okla.				
Oklahoma City Air Logistic Center	329	1,178	12,761	14,268
Aeronautical Systems Center	1	2	1	4
Air Force Flight Test Center	1	9	6	16
Air Force Research Laboratory	2	2	5	9
Electronic Systems Center	1	21	492	514
WRIGHT PATTERSON AFB, Ohio				
Aeronautical System Center	1,375	1,850	4,651	7,876
Air Force Flight Test Center	1		33	34
Air Force Museum			90	90
Air Force Research Laboratory	327	46	1,673	2,046
Air Force Security Assistance Center	7	2	314	323
Air Armament Center	69	187	20	276
Electronic System Center	22	27	443	492
HQ AFMC	306	172	893	1,371
HQ AFMC — Field Operating Agency	51	109	274	434
Warner Robins Air Logistics Center	1	12	9	22
PERSONNEL WORKING AT NON-AFMC BASES & ORGANIZATIONS THEY REPRESENT				
AF Flight Center — Edwards AFB, Calif	119	482	24	625
AF Research Laboratory	94	29	908	1,031
AFSAC — AF Security Assistance Center			5	5
Air Armament Center — Eglin AFB, Fla.	85	165	10	260
AMARC — Davis Monthan AFB, AZ	7		499	506
Arnold Engineering Development Center			21	21
ASC — Aeronautical System Center	100	75	27	202
Electronic System Center — Hanscom AFB, MA	369	1,088	1,082	2,539
HQ AFMC	12	12	36	60
HQ AFMC — FOA	1		5	6
AFSAC — AF Security Assistance Center		2		2
Ogden ALC — Hill AFB, UT	12	105	166	283
Sacramento ALC — McClellan AFB, CA		4		4
Oklahoma City ALC — Tinker AFB, Okla.	1	1	33	35
Warner Robins ALC — Robins AFB, GA	9	36	210	255

Demographics compiled by Tech. Sgt. Orren Bradley and Ms. Karen Muterspaw, AFMC Directorate of Personnel

AFMC STRENGTH BY BASE

BASE	OFFICER	ENLISTED	CIVILIAN	TOTAL
ARNOLD	58	45	179	282
BROOKS	490	999	1,463	2,952
EDWARDS	600	2,944	2,796	6,340
EGLIN	831	3,785	2,910	7,526
HANSCOM	877	625	1,460	2,962
HILL	460	1,844	9,136	11,440
KIRTLAND	629	2,178	1,817	4,624
ROBINS	401	1,735	10,436	12,572
TINKER	334	1,212	13,265	14,811
WRIGHT PATTERSON	2,159	2,405	8,400	12,964
NON-AFMC BASES	809	1,999	3,026	5,834
TOTAL	7,648	19,771	54,888	82,307

2003 Budget

DOD	$378.6 billion
Air Force	$107 billion
AFMC	$41.6 billion

* AFMC's budget includes $14.2 billion from Air Force Working Capital Fund, provides services paid for by operational commands.

Sources: Ms. Sharon Kay, AFMC FMPA and the President's Budget

Personnel attached to non-AFMC bases

Many personnel, officer, enlisted and civilian workers assigned to AFMC bases are attached for duty at non-AFMC bases.

The largest component of such personnel is from the Electronic System Center, with 2,539. The second largest group of military personnel working, other than at their base of assignment, numbers 1,031 from the Air Force Research Laboratory.

The makeup of this group is predominantly civilian, however the total of 1,999 enlisted and more than 800 officers eclipses the number of civilians.

Two different locations have only one officer on special duty from an AFMC base. This man or woman is the only military member from that base. Others are from other bases throughout the command.

Personnel are also assigned permanently to 97 AFMC organizations at more than 40 different locations in Europe, the Far East and the United States.

Air Force Materiel Command

The Air Force Materiel Command Headquarters, Wright-Patterson Air Force Base, Ohio, is home to the senior leadership and staff responsible for leading the most diverse major command in the Air Force. The 1,400 military and civilian members of Headquarters AFMC spearhead the creation, integration and support of cutting-edge weapon systems across AFMC's 10 bases and among several thousand contract companies worldwide.

Top: Headquarters Air Force Materiel Command professionals complete their command and control tasks daily from their stations in the AFMC Command Center, Wright-Patterson Air Force Base, Ohio. (Photo by Capt. Jeffrey Sandrock) Bottom: Staff Sgt. Felita Rowe performs with the U.S. Air Force Band of Fight "Systems Go" during a halftime performance during a recent Wright State University basketball game at the school's Nutter Center. The band, located at Wright-Patterson, is part of the command Public Affairs triad of bandsmen, broadcasters and journalists. (Band of Flight photo)

AFMC people transform air and space technology investments into warfighter capabilities. An annual strategic plan channels efforts into a synergistic force that produces top-notch, cost-conscious combat capability, resulting in the strongest air and space force the world has ever seen.

Directorates

Headquarters AFMC's 23 directorates are structured and manned according to the depth and breadth of their respective missions. The larger directorates are Operations, Requirements, Engineering, Contracting, Civil Engineering, Logistics, the Comptroller, Science and Technology, Plans and Programs and the Acquisition Center of Excellence. Smaller directorates are Communications and Information, Chief Technology Officer, Intelligence, Personnel, Command Chaplain, Command History Office, Staff Judge Advocate, Command Security Forces, Safety, Command Surgeon, Services, Public Affairs and Inspector General.

The Air Force Band of Flight located at Wright-Patterson, conducts its public communication and entertainment with rhythm and style, having performed 400 concerts and special events across seven states in 2001, reaching a combined audience of more than a million people.

Responsibilities

AFMC people, described in each base listing on the following pages, play a vital role in fulfilling AFMC's eight mission areas: **science and technology, test and evaluation, depot maintenance, product support, supply management, information management, information services,** and **installations and support**. Several bases tackle multiple mission areas simultaneously.

AFMC manages an annual budget of nearly $41.6 billion, which is more than half the operating budget of the United States Air Force. From its 10 geographically-dispersed bases, AFMC also supports other U.S. and allied military forces, and handles major aerospace responsibilities for the Defense Department.

An active participant in military operations and exercises, the AFMC headquarters staff deployed nearly 10 percent of its military population last year. AFMC professionals fulfilled leadership and support duties in Defense Department operations, most notably Enduring Freedom, Noble Eagle, Northern Watch and Southern Watch.

AFMC took the lead role in Bright Star, a multinational exercise held at two separate locations in Egypt. While the U.S reeled from the aftermath of September's terrorist attacks, Bright Star officials were consolidating the lessons learned from the exercise.

The legacy of the AFMC-led exercise contributed to the command's understanding of how to conduct operations effectively and efficiently in the inhospitable environments of the Middle East and the South-central Asian subcontinent. It also fostered good relations with U.S. allies in the region, most notably the host nation of Egypt, at a time when friendship between nations is vital.

Transformation, AFMC style

AFMC's transformation will lead to more advances in resource management and efficiency, such as the rapid development of weapon systems in support of America's war against terrorism. AFMC's transformation includes making improvements wherever possible and empowering employees to identify opportunities in their own operations to make the final product higher in quality and lower in cost.

As a prime example, the AFMC Chief of Technology Office is pursuing the proven business practice of integrating web-based processes into Air Force workstations. Web-based AFMC processes, delivered by the AFMC Portal, currently under development, directly support President Bush's initiative for increasing the efficiency and effectiveness of the Federal Government by using 21st Century information technology to temper and refine federal government business.

Gone but not forgotten

As part of a series of base realignments and closures ordered by Congress, two of AFMC's air logistics centers of McClellan AFB, Calif., and Kelly AFB, Texas, closed their doors in the summer of 2001, and the Space and Missile Systems Center at Los Angeles AFB, Calif., was transferred to the Air Force Space Command in October 2001.

Top: Headquarters Air Force Materiel Command at Wright-Patterson AFB, Ohio, is home to more than 2,000 employees and contractors. (Photo by Lt. Gailyn Whitman) Bottom: An initiative by the Defense Logistics Agency, in conjunction with AFMC and the Defense Department, is to invest $500 million over four years to increase aviation and engine-related spare parts availability from 50 percent to 82 percent. (Photo by Chief Master Sgt. Don Sutherland)

Ogden Air Logistics Center

The primary mission of Ogden Air Logistics Center, located at Hill Air Force Base, Utah, is to support the warfighter through a multiplicity of products. Nearly 300 F-16s are modified and maintained yearly. In the last year, the F-16 production facility has knocked five weeks off the turnaround time to combat units. In support of Operations Enduring Freedom and Northern and Southern Watch, nearly 9 million pounds of munitions have been shipped; electronics, avionics, radar, navigational and laser systems for nine different aircraft repaired, overhauled or modified; one-stop flight training system program management is supplied for more than 20 aircraft; and the Peacekeeper and Minuteman ICBMs managed at Hill stand ready for action.

Top: An air traffic controller tests a Baker Life Chute at the Hill AFB, Utah, control tower. The chute is designed to help personnel exit the top story of the control tower quickly and safely in an emergency. Bottom: An airman with 775th Civil Engineer Squadron radios for orders during a recent training exercise held at Hill. (OO-ALC photos)

Ogden Air Logistics Center is the largest employer in Utah, with more than 22,000 military, Defense Department civilians and contractors supporting an estimated 6.5 million production hours.

Responsibilities

The center has worldwide logistics management and maintenance support responsibilities for some of the Air Force's most sophisticated weapon systems. Ogden has responsibilities for Air Force-wide item management, depot-level overhaul and repair for all types of landing gear, wheels, brakes and tires and is the logistics manager for all conventional air munitions, solid propellants and explosive devices used throughout the Air Force.

The center is also responsible for program management of 37 models of mature and proven aircraft, as well as providing development and support for photonics imaging and reconnaissance equipment; aircraft and missile crew training devices; avionics; hydraulic, pneudralics and radar components; instruments; gas turbine engines; power equipment systems; special purpose vehicles; shelters; and software engineering.

Weapon systems supported

F-16, C-130, A-10, B-2, KC-135, T-38 and 37 other mature and proven weapon systems. Additionally the Minuteman and Peacekeeper ICBM System Program Office is at Hill. The center is also the leading provider of rocket motors, small missiles, air munitions and guided bombs and serves as the ammunition control point for the Air Force.

Area

6,698 acres, or 15 square miles. The base also supports the 900,000-acre Utah Test and Training Range, the Defense Department's largest over-land special-use airspace within the continental United States.

Tenants

388th Fighter Wing (Air Combat Command) and 4219th FW (Air Force Reserve Command), the Defense Logistics Agency, Defense Information Services Agency regional computer center, Army non-tactical generator and rail equipment repair center, Army Corps of Engineers, Air Force regional recruiting center, U.S. Forest Service and Defense Audit Agency.

Budget

$7 billion

Web address

http:www.hill.af.mil

Top: Hill AFB, Utah, firefighters practice removing an injured pilot from a downed aircraft during a major accident response exercise. (Photo by Senior Airman Russ Martin) Bottom left: A Hill employee inspects an engine at the base's recently opened gas turbine engine facility. (Photo by Senior Airman Russ Martin) Bottom right: Production line for F-16 Flying Falcon programmed depot maintenance. More than 40 F-16s are modified and upgraded here every year. (OO-ALC photo)

Oklahoma City Air Logistics Center

The Oklahoma City Air Logistics Center, Tinker Air Force Base, Okla., supports the warfighter by repairing and maintaining a variety of aircraft that includes bombers, refuelers and reconnaissance aircraft, all used in the war against terrorism and for homeland defense. Many crucial airborne accessories are also maintained at the center including life support systems such as oxygen equipment and ejection seats.

It also manages and repairs engines that power a wide variety of Air Force and Navy fighter aircraft, B-1B and B-2 stealth bombers and the backbone of America's defense, the B-52, as well as cruise missiles. The depot's maintenance of these important weapons systems has kept them in the air for decades, some surpassing 50 years.

Ms. Stormy Hopson, a sheet metal mechanic at Tinker AFB, Okla., works on the wing of a KC-135 undergoing programmed depot maintenance. (Photo by Ms. Margo Wright, OC-ALC)

The Oklahoma City Air Logistics Center is the largest industrial complex in the Air Force. Product lines include aircraft, engines, missiles, software and airborne accessories, together valued at more than $59 billion. In 2001, the center became the first Defense Department agency to register International Organization for Standarization, or ISO, a testament to its quality processes.

Responsibilities

The center provides specialized logistics support, management, maintenance and distribution for weapons systems worldwide valued at more than $2 billion. Logistics support for aircraft such as the E-3 AWACS, C/KC-135, B-52, B-2 and B-1 is provided from cradle to grave.

The center manages and maintains a $37.2 billion inventory of more than 21,000 engines, 1,800 missiles and 24,800 accessories supporting thousands of aircraft including the VC-25, also known as Air Force One.

It is also responsible for depot-level repairs, modifications, overhaul and functional check flights of the B-1, B-52, C/KC-135, E-3 and the Navy's E-6 aircraft. Engines managed include the F100, F101, F108, F110, F118, TF30, TF33, TF34, TF39, TF41, T400,T700, J33, J57, J69, J75, J79, J85, J56, T64 aircraft engines and the F107 and F112 missile engines.

The center's airborne accessories workload includes hydraulics, oxygen equipment, fuel accessories, bearings and life support equipment among other items.

Weapons systems supported

B-1B, B-2, KC-10, E-3, B-52 and C/KC-135 aircraft.

The center provides contractor logistics support for commercial derivative aircraft including airlift, tanker and presidential aircraft. Missile systems managed by the center include the air launched cruise missile, conventional air launched cruise missile, advanced cruise missiles, harpoon and bomber weapons integration equipment.

Area

5,033 acres

Tenants

552nd Air Control Wing, 507th Air Refueling Wing, 38th Engineering Installation Group, 3rd Combat Communications Group, Strategic Communications Wing, Defense Logistics Agency, Defense Information Systems Agency.

Budget

$10.5 billion

Web address

http://www.tinker.af.mil

Top: Ms. Diana Owen, a fabric worker in the Tinker AFB, Okla., Textile and Life Support Unit, readies uniforms for squadron members preparing to deploy. Bottom left: Mr. Larry Elliott, back, and Mr. Donald Ticer, sheet metal mechanics, attach rib lines to spars in a B-1B horizontal stabilizer at Tinker. Bottom right: Ms. Edith Clemons, sheet metal mechanic, works on parts for an E-3 undergoing depot maintenance. (Photos by Ms. Margo Wright, OC-ALC)

Warner Robins Air Logistics Center

Assets managed and maintained by the Warner Robins Air Logistics Center, located at Robins Air Force Base, Ga., are critical to America's ability to wage war and to move people and equipment around the globe in its continuing efforts to stem the tide of terrorism. Warfighters depend on WR-ALC to provide quality depot maintenance and logistics support for F-15, C-5, C-141, C-130, all Air Force helicopters, as well as logistics management support for the C-17 Globemaster III and U-2.

A technician checks a C-130 propeller during depot maintenance in the C-130 System Program Office, Warner Robins ALC, Robins AFB, Ga. (WR-ALC photo)

As one of the Air Force's three air logistics centers, Warner Robins-ALC has worldwide management and engineering responsibility for the repair, modification and overhaul of the F-15 Eagle, the C-130 Hercules, the C-141B Starlifter, the C-5 Galaxy and all Air Force helicopters. The center also provides logistical support for the C-17 Globemaster III, all Air Force missiles, vehicles, general purpose computers, and avionics and electronic systems on most aircraft. In addition, the center has worldwide management and engineering responsibility for the U-2 Dragon Lady.

The center supports fire-fighting equipment and vehicles of all types and is the technology repair center for life-support equipment, instruments (gyroscopes), airborne electronics and aircraft propellers.

WR-ALC manages more than 200,000 items representing the full range of avionics functions and technology. These items include aerospace communications and navigation equipment, airborne bomb and gun-directed systems, target acquisition systems and most Air Force airborne electronic warfare equipment. The center provides cradle-to-grave management support for the low-altitude navigational targeting infrared for night, or LANTIRN system, the joint tactical information distribution system and the worldwide military command and control system.

The center is also responsible for procurement, supply and maintenance functions for most Air Force bases along the East Coast, as well as the Atlantic Missile Test Range, New Foundland, Labrador, Greenland, Iceland, Bermuda, the Azores and all Air Force and Security Assistance Program activities in Europe, Africa and the Middle East.

Weapon systems supported

F-15, C-141, C-130, C-5, U-2, C-17, utility aircraft, Air Force helicopters, including the MH-53 Pave Low III variants, HH-60 Pave Hawk, UH-1N Huey and Air Force missiles.

Area

8,723 acres

Tenants

Headquarters, Air Force Reserve Command, 93rd Air Control Wing (Air Combat Command), 116th Bomb Wing (Georgia Air National Guard), 5th Combat Communications Group (ACC), 19th Air Refueling Group (Air Mobility Command), 367th Air Force Recruiting Group, Defense Information System Agency, and the 78th Air Base Wing.

Budget

$5.1 Billion

Web address

https://wwwmil.robins.af.mil

Top: A technician in the avionics management directorate runs tests on a piece of avionics equipment. Bottom left: Maj. Brent Wharton, a C-130 test pilot, performs some basic quality checks on a C-130 "Combat Talon" before it is considered ready for a test flight. Bottom right: A technician prepares to use a computer programmable precision drill in the technology and industrial support directorate.

Air Force Flight Test Center

The Air Force Flight Test Center at Edwards Air Force Base, Calif., is the AFMC center of excellence for research, development and test and evaluation of aerospace systems for the United States and its allies. It operates the U.S. Air Force Test Pilot School and is home to NASA's Dryden Research Center and to considerable test activity conducted by America's commercial aerospace industry. From the development of the country's first jet aircraft to the Air Force's newest fighter, the F-22 Raptor, the test forces at Edwards have played a role in virtually every aircraft to enter the Air Force inventory since the Second World War. This combat support establishes the Flight Test Center's direct and tangible link to the warfighter.

Above: Lockheed Martin's X-35A Joint Strike Fighter concept demonstrator takes to the skies of Edwards AFB, Calif. The Air Force Flight Test Center is slated to receive the first JSF for flight test in late 2005. (Photo by Mr. Tom Reynolds) Below: Firefighters help Master Sgt. Gary Wright, a volunteer victim from the 95th Mission Support Squadron, exit the portable decontamination unit during a major accident response exercise, preparing Edwards to handle real world situations before they occur. (Photo by Capt. Mike Imholz)

Responsibilities

AFFTC assists in accomplishing the Air Force's overall mission, defending the United States and protecting its interests through aerospace power, ensuring current and future airmen have proven equipment when flying into harm's way. When necessary, test forces deploy and operate developmental test aircraft and systems in support of combat missions.

The center's contribution to U.S. fighting forces results from test and evaluation. The primary purpose of test and evaluation is to influence the design of weapon systems, ensuring they meet operational war-fighting, combat support or training requirements.

AFFTC operates the Edwards Flight Test Range, which comprises 20,000 square miles of airspace, including three supersonic corridors and four aircraft spin areas.

Edwards has an array of ground test facilities. The Avionics and Test and Integration Complex, which includes the massive Benefield Anechoic Facility, allows for complete testing of a fully integrated avionics suite in a simulated flight environment, including electronic threats and computer software checkout. Major organizations are the 412th Test Wing and the 95th Air Base Wing.

Weapon systems supported

B-1B, B-2, B-52H, C-12C, C-17A, NKC-135B/E, KC-135R, C-135C/E, CV-22B, F-15/A/B/C/D/E, N/F-16A/B/C/D, F-22A, YF-117A, A/T-38A/B/C, NT-39A/B, T-39A, T-3A, X-45A, RQ-4A. Edwards is also slated to receive an Airborne Laser test aircraft in 2002.

Area

301,000 acres, which includes 65 linear miles of usable landing area on Rogers and Rosamond dry lakes.

Tenants

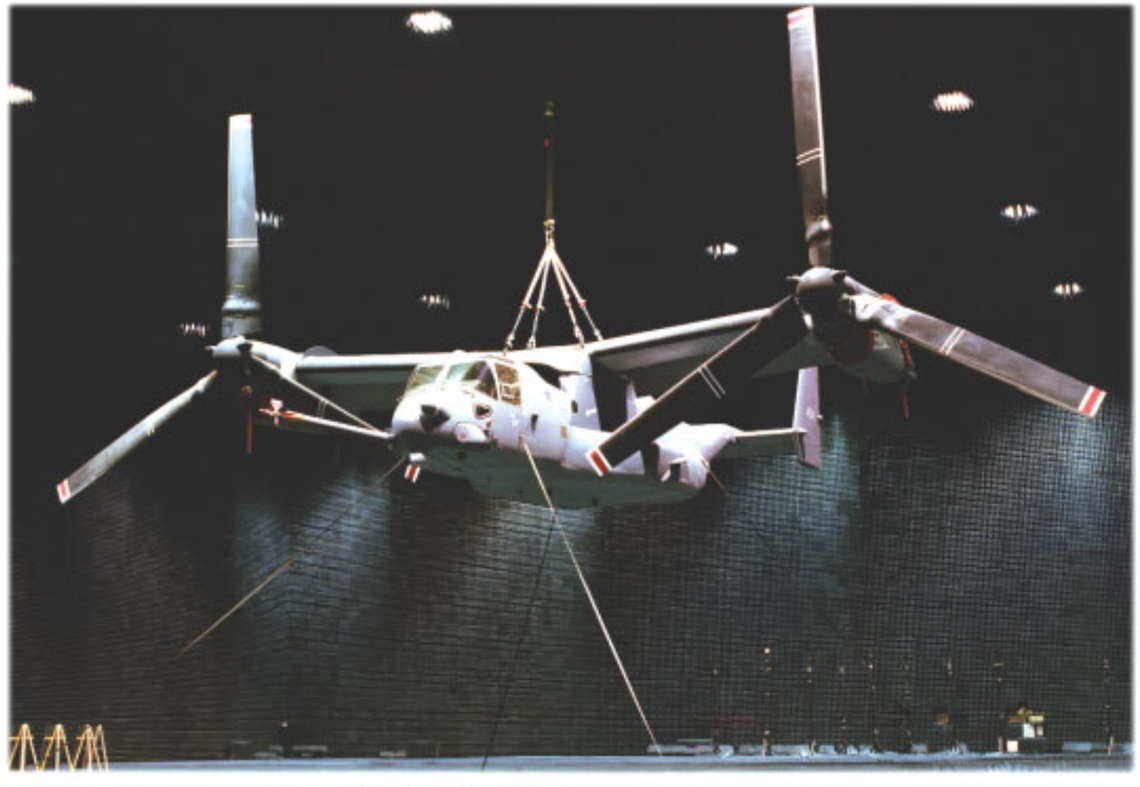
Air Force Research Laboratory's Propulsion Directorate; Dryden Flight Research Center (NASA); 18th Space Surveillance Squadron; 31st Test and Evaluation Squadron (Air Combat Command); Air Force Operational Test and Evaluation Center, Detachment's 5 and 6; and Marine Aircraft Group 46, Detachment Bravo.

Budget

$742 million

Web Address

http://www.edwards.af.mil



Top: The Air Force CV-22 Osprey undergoes electronic warfare testing in the Benefield Anechoic Facility at Edwards. Edwards is home to the CV-22 Integrated Test Force responsible for flight testing the Air Force version of the V-22 Osprey. (Photo by Mr. Phil Kocurek) Bottom left: Staff Sgt. Byron Grandy-Richardson (left) and Staff. Sgt. Joseph Shulte, of the CV-22 Integrated Test Force at Edwards, work on the hydraulics and electric systems inside the wing cove of a CV-22. The two are ensuring that proper clearances exist between the wires in the cove in order to prevent chaffing. (Photo by Ms. Leigh Anne Bierstine) Bottom right: A B-52 crew from the 419th Flight Test Squadron at Edwards launches an AGM-154A Joint Standoff Weapon during flight testing geared at improving the B-52's combat capability. (AFFTC Photo)

Arnold Engineering and Development Center

The Arnold Engineering and Development Center, Arnold Air Force Base, Tenn., contribution to the warfighter is the unparalleled ground testing of all Defense Department aerospace systems in use today. Aerospace systems being used today in the war on terrorism were tested at AEDC both in development and throughout each system's service life. The center is currently supporting the next generation of warfighters with the testing of weapons systems such as the F-22 Raptor and the Joint Strike Fighter, ensuring our nation's air dominance well into the 21st Century.

The scale version Joint Strike Fighter model goes through testing in the 4-foot Transonic Wind Tunnel at AEDC. (AEDC photo)

Arnold Engineering Development Center provides customers with the world's largest array of aerospace ground test and evaluation facilities and capabilities. The center also ensures AEDC ground test facilities, technologies and knowledge fully support today's and tomorrow's war fighters.

Responsibilities

AEDC is the Defense Department's largest aerospace ground test and evaluation complex. Center scientists and engineers perform tests, engineering analyses and technical evaluations for research, system development and operational programs for all the U.S. armed forces, other government agencies and the commercial aerospace industry.

AEDC has tested some component of virtually every high-performance aerospace system in the Defense Department inventory and most space vehicles.

The center is unique in that almost 2,600 of its approximately 2,900 personnel are civilian contractors. There are 102 military personnel assigned, 202 government civilians and 52 non-appropriated fund and base exchange employees.

Weapon systems supported

As a test and evaluation center, AEDC doesn't have a weapon assigned. However, the center maintains a $7.3 billion infrastructure consisting of 58 aerospace test and simulation facilities, including wind tunnels, altitude jet and rocket test cells, ballistic ranges, arc heaters and space chambers.

Twenty-seven of these facilities are unique in the United States and 14 are unique in the world. Every high-performance aircraft and missile in the Defense Department inventory has been tested here.

Area

39,081 acres, including the 5,000-foot airfield reactivated in 2000. Some of the area outside the test complex is a Tennessee State Wildlife Management Area, home to a large variety of wildlife.

Tenants

Air Force Office of Special Investigations, Air Force Audit Agency, Army and Air Force Exchange Service and the Defense Commissary Agency.

Geographically separated units

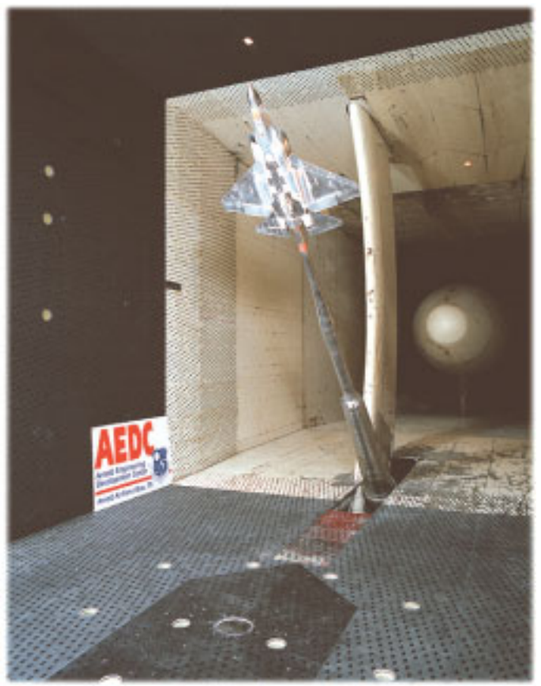
Hypervelocity Wind Tunnel 9, White Oak, Md.

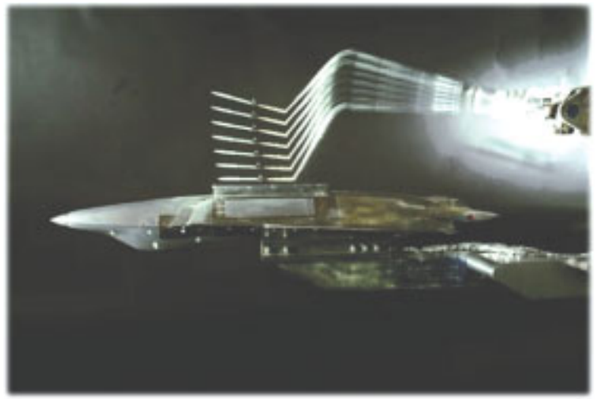
Budget

$331 million

Web address

http://arnold.af.mil





Top: Inside the Arnold AFB, Tenn., 16-foot Supersonic Wind Tunnel. The propulsion wind tunnel was designated an international historic mechanical engineering landmark in 1989. Bottom left: The Joint Strike Fighter model goes through testing in the 16-foot Transonic Wind Tunnel. Bottom right: The F-22 model goes through store-separation testing in AEDC's 4-foot Transonic Wind Tunnel. (AEDC photos)

Aeronautical Systems Center

From development through acquisition to delivery, the Aeronautical Systems Center, Wright-Patterson Air Force Base, Ohio, plays a key role in nearly every aspect of Operations Enduring Freedom and Noble Eagle and other ongoing operations. Air Force bombers, fighters, airlifters, tankers and intelligence, surveillance and reconnaissance assets developed and sustained by ASC are in action every day. Members of the 74th Medical Group, 88th Air Base Wing Security Forces, and other ASC organizations have been deployed to various geographical locations in support of the war on terrorism. To guarantee agile logistics support and immediately infuse the newest technologies, more than 50 acquisition surges have already been implemented and more are planned.

Top: Lt. Col Ben Martin, 88th Security Forces commander, greets students from Eastmont Elementary School who gathered to present a patriotic banner that expressed their appreciation and support to the members of Team Wright-Patterson. Other local organizations and schools have made similar presentations. Bottom: The C-17, managed at ASC, can fly strategic distances and execute tactical missions in a direct delivery from anywhere in the U.S to anywhere in the world. It can land on short runways with a full cargo load — a capability no other transport can provide. This allows the C-17 to fly into thousands of places other aircraft cannot. (ASC photos)

Aeronautical Systems Center arms the U.S. warfighter with world-class weapon systems, enabling combat aerospace forces to ensure global vigilance, reach and power.

Responsibilities

ASC rapidly develops, acquires, modernizes and sustains the world's best aerospace systems through its acquisition work force and support units at Wright-Patterson, Brooks AFB, Texas, and other locations around the country.

ASC's major acquisition programs include fighter, bomber, transport, reconnaissance and trainer aircraft.

Priorities under ASC's acquisition management include achieving mission success through: emphasizing speed and innovation, rapidly transitioning technology into systems and business processes, developing and retaining a high performance workforce and forming strong partnerships with warfighters, industry, and the local community.

Current programs include the F-22 air dominance fighter, the C-17 inter- and intra-theater transport, the B-2 bomber and unmanned aerial vehicles for reconnaissance and other missions. Recent additions to ASC are the Airborne Laser System Program Office, which directs design, development, integration and testing of the revolutionary Airborne Laser weapon system, and the Aeronautical Enterprise Program Office set up to deal with issues across several types of aging platforms.

To meet forecasted needs of the Defense Department well into the 21st century, ASC's Major Shared Resource Center is home to the eighth-largest super computer in the world. Using high-performance information technologies, the center is able to tackle large-scale problems previously beyond the reach of current processing platforms.

Area

8,357 acres

Tenants

ASC supports more than 125 organizations at Wright-Patterson and other U.S. locations. At Wright-Patterson, these include Headquarters Air Force Materiel Command, Air Force Research Laboratory, Air Force Institute of Technology, 445th Airlift Wing (Air Force Reserve Command), United States Air Force Museum, Air Force Security Assistance Center and National Air Intelligence Center.

Budget

$13 billion

Web address

http://www.wpafb.af.mil

Top: A loadmaster prepares to open the cargo ramp on a C-17 Globemaster III, one of the many aeronautical programs supported by ASC. Bottom right: Members of the 74th Medical Group, Wright-Patterson Medical Center prepare to deploy in support of Operation Noble Eagle and Operation Enduring Freedom. More than 150 Wright-Patterson Medical Center professionals passed through the line in final preparation for their assignment. Bottom left: Tech. Sgt. Mike Ferguson, a crew chief from Wright-Patterson, marshals in a C-141 Starlifter cargo aircraft at Moron Air Base, Spain, on Jan. 25 in support of Operation Enduring Freedom. (U.S. Air Force photo by Staff Sgt. P.J. Farlin)

311th Human Systems Wing

The 311th Human Systems Wing, Brooks Air Force Base, Texas, is the warfighter's choice for leading edge human performance enhancement, protection, and global health support. The Wing is responsible for the acquisition and sustainment of life support, nuclear-biological-chemical rapid response, laboratory analysis, aeromedical equipment and medical information systems that directly support the warfighter from basic training throughout their entire career.

U.S. Air Force School of Aerospace Medicine students erect a mobile, climate-controlled tent at Brooks AFB, Texas, during expeditionary medical support training. Since July 2000, USAFSAM's EMEDS team has trained nearly 1,000 students. EMEDS is the first echelon of medical support provided during contingency operations. (Courtesy photo)

The 311th Human Systems Wing is the U.S. Air Force advocate for integrating and maintaining the human in Air Force systems and operations. Much of the work is considered transferable for commercial use, and the wing actively seeks opportunities to offer new research and technological discoveries to interested parties. The 311th HSW is the human systems branch of the Aeronautical Systems Center at Wright-Patterson AFB, Ohio.

Responsibilities

The wing's mission is to improve combat power and efficiency in human performance protection and support through the many facets of aerospace medicine. The wing produces products that assess and manage health, safety and environmental risks for the U.S. Air Force and Defense Department, training more than 6,000 aeromedical personnel annually. Wing personnel handle more than 140 technical acquisition and sustainment programs.

Through the Brooks City-Base Project, a partnership between the Air Force and the City of San Antonio, the base will demonstrate new ways to improve mission effectiveness while reducing the cost of providing quality installation support.

Area

1,308 acres

Wing units

The 311th HSW wing elements include: the 311th Air Base Group, the Human Systems Program Office, the U.S. Air Force School of Aerospace Medicine and the Air Force Institute for Environment, Safety and Occupational Health Risk Analysis.

Major tenants

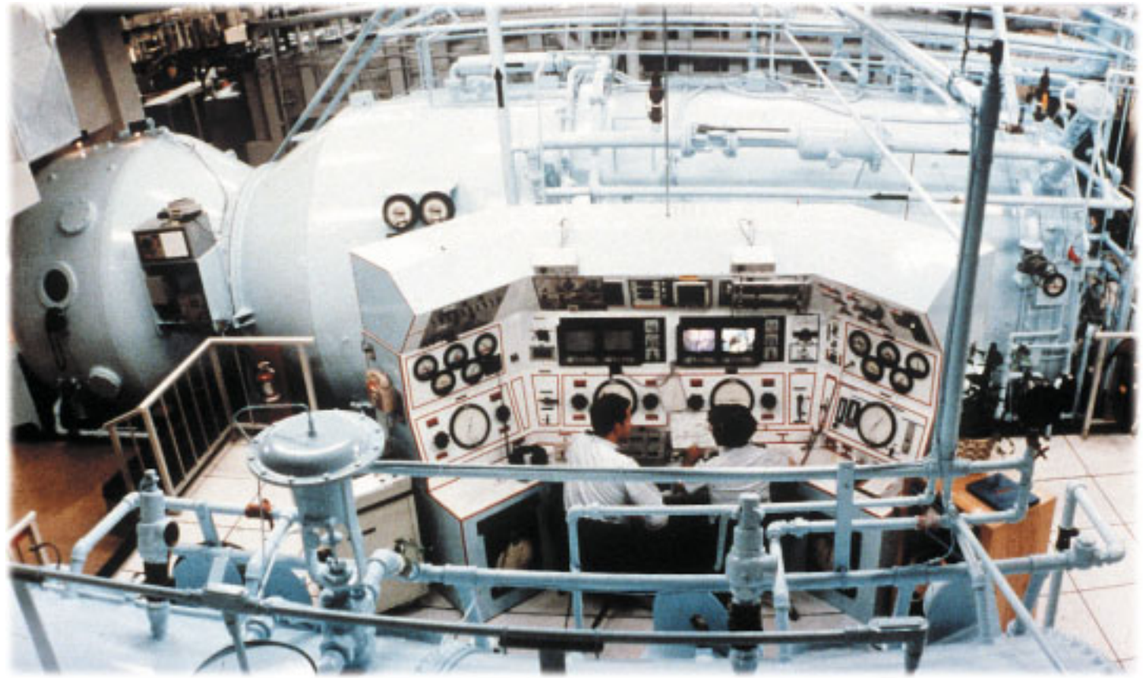
Office for Applied Solutions in Operational Medicine, the Air Force Medical Support Agency, a detachment of the Air Force Medical Operations Agency, the Human Effectiveness Directorate of the Air Force Research Laboratory, the Air Force Outreach Program Office, Air Intelligence Agency, Air Force Center for Environmental Excellence, the 68th Information Operations Squadron, Naval Health Research Center Detachment, and the U.S. Army Medical Research Detachment of Walter Reed Army Institute of Research. The special relations between these units results in a blending of scientific, medical, environmental, acquisition and instructional expertise.

Budget

$418 million

Web address

www.brooks.af.mil



Top: The U.S. Air Force School of Aerospace Medicine's Davis Hyperbaric Laboratory at Brooks AFB, Texas. The laboratory's role has expanded since 1974 when its primary purpose was to treat aviators suffering from decompression sickness. It is now internationally recognized as a leading authority in patient treatment, facility requirements, safety standards and research using hyperbaric oxygen. Bottom left: Capt. Anoop Attreya, a public health officer and member of the Air Force Institute for Environment, Safety and Occupational Health Risk Analysis' Theater Epidemiology Team, collects a water sample for testing during the National Disaster Medical Systems exercise held in San Antonio. Bottom right: Members of the 311th Human Systems Program Office, the U.S. Air Force School of Aerospace Medicine and the Air Mobility Command got a glimpse of the future of aeromedical evacuation on board a C-17 during a recent training flight. The flight was intended to evaluate the new patient support pallet developed by the 311th SPO. (311th HSW photos)

Air Armament Center

For more than 66 years and spanning seven wars, Eglin Air Force Base, Fla., has played a premier role in the nation's airpower history by planning, developing, producing, fielding and sustaining all air-delivered munitions. Seventy-two percent of all the weapons dropped in Afghanistan were "smart" weapons developed and tested here. Precision weapons have revolutionized warfare as we know it through low-collateral damage and affordable cost. Munitions successes include the Joint Direct Attack Munition, the Operation Enduring Freedom weapon of choice, the EGBU-15 enhanced guide bomb unit and the AGM-130 air-to-ground missile used to destroy tunnel complex and cave entrances in Afghanistan. Eglin has also deployed more than 1,000 personnel in support of Operations Noble Eagle and Enduring Freedom.

An Air Force munitions specialist from the 28th Air Expeditionary Wing changes the configuration of a B-52 external bomb rack from Joint Direct Attack Munitions to conventional munitions during Operation Enduring Freedom. Eglin's AAC is responsible for developing and testing of munitions carried aboard B-52 aircraft. (U.S. Air Force photo by Staff Sgt. Shane Cuomo)

The Air Armament Center is responsible for development, acquisition, testing, deployment and sustainment of all air-delivered weapons.

Responsibilities

The Air Armament Center serves as the focal point for all Air Force armaments. It applies advanced technology, engineering and programming efficiencies across the product life cycle to provide superior combat capability to the war fighter.

The center plans, directs and conducts test and evaluation of U.S. and allied air armament, navigation and guidance systems and command and control, or C2, systems. It operates at two Air Force installations, providing host support to Eglin and Kirtland AFB, N.M., and supports the largest single-base mobility commitment in the Air Force.

AAC accomplishes its mission through four components. Three located at Eglin are the armament product directorate, 46th Test Wing and 96th Air Base Wing, and the 377th Air Base Wing located at Kirtland. It has approximately 7,600 military personnel; 3,700 civilians; 3,500 contractors and 535 non-appropriated funds personnel.

Weapon systems supported

Eglin is home to more than 40 weapon systems, including: surface attack guided munition, or ADM; advanced medium range air-to-air missile, or AMRAAM; EGBU-15, GBU-15, a modular air-to-ground weapon; the enhanced GBU-15; GBU-28, designed for use against deeply buried hardened command-and-control facilities; CBU-97/B sensor fuzed weapon; joint direct attack munition, or JDAM; joint air-to-surface standoff missile, or JASSM; and small diameter bomb, or SDB.

Area

The base is the largest military installation in the Defense Department and consists of more than 724 square miles of land area and more than 93,000 square miles of water ranges for testing and training.

Tenants

Eglin has more than 50 tenant units. Most prominent are the 33rd Fighter Wing, (Air Combat Command) the 53rd Wing (ACC), the 919th Special Operations Wing (Special Operations Command) and the Air Force Research Laboratory Munitions Directorate. Each military service is represented.

Budget

$3.9 billion

Web address

http://www.eglin.af.mil

Top: Staff Sgt. Lee Pauli, 40th Flight Test Squadron crew chief, places a canopy ground safety strut on an F-15 aircraft to lock the canopy in place before he inspects the aircraft. Middle left: An Eglin weapons crew loads combined effects munitions on a B-52. The CEM is equipped with a wind corrected munitions dispenser guidance kit used in combat for the first time over Afghanistan. Bottom left: Tech. Sgt. Brian Ward checks identification at the gate to Eglin AFB, Fla. (AAC photos) Bottom right: Staff Sgt. Quincy Gordon, 40th Flight Test Squadron and Airman 1st Class Kellston McDonald, 96th Supply Squadron, attach a refuel nozzle to an F-16. (Photo by Mr. Greg Davenport, ACC)

377th Air Base Wing

The 377th Air Base Wing's mission at Kirtland Air Force Base, N.M., is to provide world-class munitions maintenance, readiness and training, and base operating support to approximately 76 federal government and 384 private sector tenants and associate units.

Technology developed at Kirtland plays an increasingly important role in countering terrorist threats against the nation. Technologies to foil biological and nuclear terrorists, tools to aid emergency and first-response personnel, technologies and procedures for improving airport and border security and tools to enhance intelligence-gathering capabilities are just some of the things which agencies at the base are working on. "To help our nation secure a peaceful and free world through technology," is the mission statement of Sandia National Laboratories and the one of the goals of Kirtland.

A 58th Special Operations Wing, 551st Special Operations Squadron, MH-53J Pave Low IIIE flies a training mission near Kirtland A FB, N.M.. The 58th SOW offers more than 90 courses for special operations and combat search and rescue troops at Kirtland. The wing trains some 1,600 students each year in HH-60 Pave Hawk, UH-1N Huey, TH-53A and MH-53J Pave Low IIIE helicopters, MC-130 Combat Talon and MC-130P Combat Shadow aircraft. (U.S. Air Force Photo by Master Sgt. Dave Nolan)

The 377th Air Base Wing provides world-class munitions maintenance, readiness and base operating support.

Responsibilities

The 377th ABW operates both of the two critical asset depots in the United States for the Air Force.

As a unit of the Air Armament Center, Eglin AFB, Fla., the 377th supplies several hundred fully trained people for worldwide contingencies.

The wing provides security, legal, medical, fire response, personnel management, facility and utility management, housing, food service, chapel service, recreational, supply, airfield management and a myriad of community support activities for active duty, retired and civilian employees.

Area

52,678 acres

Tenants

The 377th ABW provides support to 76 federal government and 384 private sector tenants and associates to include: Air Force Research Laboratory's Directed Energy and Space Vehicle Directorates; Sandia National Laboratories; Defense Threat Reduction Agency; Air Force Inspection Agency; Headquarters Air Force Safety Center; Air Force Operational Test and Evaluation Center; Department of Energy's Albuquerque Operations Office; Space and Missile Systems Center, Test and Evaluation; Airborne Laser Systems Office; Theater Aerospace Command and Control Simulation Facility; 150th Fighter Wing; and the 58th Special Operations Wing.

Budget

$269 million

Web address

http://www.kirtland.af.mil

Top: A candidate to become a U.S. Marine Corps officer crawls through the Kirtland AFB, N.M., Madera Canyon obstacle course. In addition to active duty, the base supports ROTC, Guard and Reserve units throughout New Mexico. (Photo by Mr. Keith Wright) Bottom left: A member of the 377th Medical Group's Bioenvironmental Flight demonstrates taking samples for air contamination in a wartime environment. Bottom right: Three Kirtland AFB "defenders" are prepared for an attack in their chemical warfare protective gear during the March 11-15 Operational Readiness Exercise conducted by the 377th Air Base Wing. The exercise with live explosions and "terrorist attacks" allowed Kirtland warfighters to practice self-aid and buddy care and to locate and mark unexploded ordnance.

Electronic Systems Center

The Electronic Systems Center, Hanscom Air Force Base, Mass., played a vital part in establishing the Continental NORAD Region Operations Center as an immediate response to the threat of terrorism. This included installation of ESC's theater battle management core system and the NORAD Contingency Suite. These capabilities enabled the Air Force to coordinate regional air defense by rapidly disseminating air-tasking orders and significantly improved U.S. operational situation-awareness.

Overseas, many of ESC's products, including platform-based surveillance, communications, and landing systems, have seen heavy use in the Operation Enduring Freedom theater. ESC's work, in conjunction with Air Combat Command, U.S. Central Command and others, to build the new, state-of-the-art combined air operations center at Prince Sultan Air Base, Saudi Arabia, has also proven critical. The air war has been fully coordinated from this AOC, which serves as the first evolution of the effort to build air operations centers as a standardized weapon system.

Above: Tech. Sgt. David De LaRue, Electronic Systems Center Force Protection C2 System Program Office, Hanscom AFB, Mass., aims a passive infrared sensor. The passive infrared sensor was deployed to New York to help protect the Statue of Liberty during Independence Day celebrations at the request of the National Park Service. (ESC photo)

Electronic Systems Center is a world leader in the development and acquisition of command and control systems.

Responsibilities

Many ESC programs, such as Joint STARS, Airborne Warning and Control System, constant source intelligence systems and force protection systems have performed well in conflicts such as Operation Desert Storm, Joint Endeavor and Allied Force over Kosovo and now Operations Enduring Freedom and Noble Eagle.

ESC is constantly upgrading its systems to ensure they remain state-of-the-art and working with America's warfighters to ensure the right systems are delivered. Testing and experimentation occur throughout development. These efforts are helping ESC move the Air Force toward a fully integrated and seamlessly interoperable command and control network, giving American and allied war fighters the right information at the right time so they can manage resources and defeat the enemy.

Weapon systems supported

ESC manages more than 200 programs, including the Air Force Portal, Combat Air Operations Center — Experimental, tactical automated security system, AWACS, combat intelligence system, core automated maintenance system and reliability and maintainability information system, integrated management communications contracts, joint surveillance system, Military Satellite Communications terminal programs, multi-media automated system, multi-mission advanced tactical terminal and the theater battle management core system.

Area

846 acres

Tenants

Massachusetts Institute of Technology Lincoln Laboratory, Air Force Research Laboratory's Space Vehicles and Sensors directorates.

Geographically separated units

38th Engineering Installation Group, Tinker AFB, Okla.; Cryptologic Systems Group, Kelly AFB, Texas; ESC Detachment 5, Peterson AFB, Colo.; Materiel Systems Group, Wright-Patterson AFB, Ohio, and Standard Systems Group, Gunter Annex-Maxwell AFB, Ala.

Budget

$3.5 billion

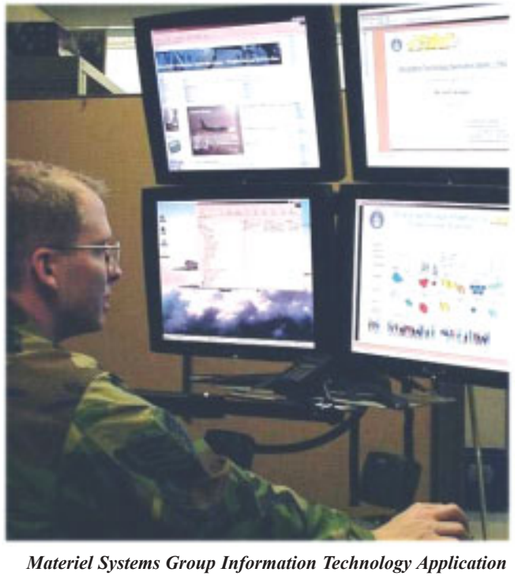
Web address

http://www.hanscom.af.mil

Top: The E-3 Sentry AWACS performed well in past conflicts, and is actively engaged in supporting current operations. (Photo by Tech. Sgt. John McDowell) Bottom left: Senior Airman Ashley Harding plays some steamin' jazz saxophone last summer at one of the Band of Liberty's popular outdoor concerts. The United States Air Force Band of Liberty is located at Hanscom AFB, Mass. The band responded to the events of Sept. 11 by dropping it's current mission objectives and designing a blockbuster patriotic multimedia program for upcoming band tours. The band continues to help nurture our nation's renewed sense of patriotism and pride by staying with a patriotic theme. Bottom right: ESC's Force Protection System Program Office acquires and delivers quality integrated command and control systems to provide force protection to the warfighter. (ESC photos)

Materiel Systems Group

The Materiel Systems Group, located at Wright-Patterson Air Force Base, Ohio, sustains global combat support information systems, develops new information technology, and supports combat solutions and the transition of processes and capabilities for delivering those solutions providing revolutionary capabilities to the warfighter. In addition to these ongoing activities, MSG has developed and implemented other IT solutions benefiting the warfighter. The Enterprise Data Warehouse provides a single source for analytical and historical data to enhance Air Force combat support decision making and its ability to improve areas such as asset visibility, weapon system management, reach-back supply operations, contingency planning and combat operations. The Technical Order Concept of Operations, an IT solution that automates the acquisition, sustainment, management, distribution and use of technical orders Air Force-wide, gives the warfighter better configuration management and more efficient maintenance, resulting in a higher weapon system mission-capable rates.



Materiel Systems Group Information Technology Application Center, or ITAC, serves as a technological hub where users share data on new technologies and information solutions. With ITAC it's possible to evaluate issues from multiple points of reference. (MSG photos)

Materiel Systems Group, a component of Electronic Systems Center, Hanscom AFB, Mass., delivers agile combat support information solutions. The organization supports the U.S. Air Force goals of information dominance by acquiring, developing, maintaining and providing technical services for some 150 information systems.

Responsibilities

MSG identifies IT enablers to support the customers strategic business needs, transforming how AFMC delivers capabilities to its customers. Its Information Technology Application Center is a hub for technology and innovation with users sharing information to enable rapid prototyping of state-of-the-art technology. It balances emerging technologies with the Global Combat Support System Air Force Integration Framework, Air Force portal and other existing computer systems, and enables understanding and implementation of new technologies for information solutions at the best possible value to the customer.

MSG has recently enhanced its business model by developing an in-house rapid prototyping capability. Utilizing the latest information technologies to provide a quick turnaround of the customer's requirements through a proof of concept demonstration, this capability builds prototypes on an infrastructure that represents both existing and planned Air Force environments. Rapid prototyping adds structure to a customer's vision, reduces requirements determination time and demonstrates how technology can help them meet mission needs.

MSG is also implementing an alternative lifecycle process approach to building IT solutions known by the acronym, Integrating Technology by a Structured Evolutionary Process, or ITSEP. Traditional acquisition and development processes are modified to effectively leverage available commercial and Government-off-the-shelf and other reuse products. This approach incorporates the benefits of commercial, in-house and government marketplaces while managing the drawbacks.

Geographically Separated Units

Operating locations at Hill AFB, Utah, and Tinker AFB, Oklahoma

Budget

$305.4 million

Web Address

https://www.msg.wpafb.af.mil

Standard Systems Group

The Standard Systems Group, located at Maxwell Air Force Base, Gunter Annex, Ala., provides support to the warfighter through a number of programs. One is the implementation of the Defense Message System, which improves messaging service while reducing maintenance costs and staffing requirements. In addition, the field assistance branch acts as a 24|7 point of contact at SSG for all standard computer systems trouble calls. The Global Combat Support System is modernizing existing logistics support systems with state-of-the-art technology, providing the warfighter with an integrated view of the combat support assets at their disposal and the ability to track the status and location of those assets. SSG continues to develop tomorrow's software, assisting the Defense Department as it restructures military worldwide communications.

Headquarters Standard Systems Group acquires, develops, integrates, implements and sustains secure, agile combat support information solutions for the Air Force and Defense Department components, enabling the warfighter to achieve success.

Responsibilities

SSG is a component of Electronic Systems Center at Hanscom AFB, Mass. The group designs, builds or buys, installs and supports the information systems necessary to provide the warfighter the right combat support information in the right place at the right time.

The information system program offices provide operational combat support capability through information systems for a diverse group of functions such as contracting, logistics, finance, medical and operations. This capability is provided to more than 420 active duty Air Force, Air Reserve, Air National Guard and other Defense Department units worldwide.

SSG's own in-house software development organization — the Software Factory — designs, obtains, develops, codes, tests, integrates, controls, distributes and sustains software for SSG systems. For all systems supported by SSG, the Software Factory provides test support, consolidated customer support and centralized distribution of software.

The field assistance branch is the 24-hour every day point of contact for computer system trouble calls in support of the Air Force standard data systems originating from Department of Defense customers worldwide. The branch evaluates problems and provides solutions for up to 600 trouble calls a day.

Through the commercial information technology-product area directorate the group acquires quality commercial information technology hardware, software and services at great prices used by virtually every organization on bases worldwide. The IT superstore provides on-line ordering for affordable, readily available and easily accessible sources of supply for commercial information technology products and services.

SSG and the City of Montgomery sponsor the annual Air Force Information Technology Conference to bring computer users up to date on efforts of industry and government agencies through presentation by Air Force and industry senior leaders.

Budget

$207 million plus

Website

https://web2.ssg.gunter.af.mil

Standard Systems Group has many roles, to include providing computer-assisted customer service, designing tailored computer-communications systems, ensuring information reliability across Air Force networks and conducting system setup, configuration, diagnostics and support. (Photos by Capt. Jeff Sandrock)

Air Force Research Laboratory

The Air Force Research Laboratory leads the discovery, development and integration of affordable warfighting technologies for aerospace forces. AFRL partners with government, industry and academia pushing the limits of science and technology to accomplish this mission. The laboratory pioneers new capabilities to meet the needs of warfighters today, tomorrow and well into the future. AFRL leverages its technological information to offer potential solutions to warfighter needs for new technologies providing them a rapid response capability.

Top: Mr. Michael Hayduk, an electronics engineer with the Sensors Directorate, Rome Lab., N.Y., inspects an electro-optic modulator designed for use in high-speed fiber optic communications systems. Bottom: As laser beams change the properties of cooled sodium atoms, Dr. Lene Hau makes light stand still at the Air Force Office of Scientific Research. (AFRL photos)

In 1997, the Air Force consolidated its laboratories into the Air Force Research Laboratory, a single entity headquartered at Wright-Patterson Air Force Base, Ohio.

There are nine technology directorates addressing different technology challenges, and the Air Force Office of Scientific Research. Technological research is performed at 10 research sites across the country, representing the future for innovation within Air Force Materiel Command.

AFRL employs approximately 5,200 government employees, including about 1,250 military and 4,000 civilian personnel. It is responsible for the Air Force's science and technology budget of nearly $1.6 billion including basic research, applied research and advanced technology development. There's an additional $1.1 billion from AFRL customers.

Air Force Office of Scientific Research

The Air Force Office of Scientific Research, headquartered in Arlington, Va., manages the Air Force's investment in basic research. AFOSR accomplishes this task through strong, productive alliances with a wide array of government agencies, the academic research community and industry. They invest in long-term, broad-based research in aerospace related science and engineering, and exploit revolutionary scientific breakthroughs to address the needs of the Air Force.

AFOSR's mission bringing newly created scientific understanding and technology options from the scientific community has generated payoffs for weapons and devices in use by modern warfighters. The laser, precision munitions, stealth aircraft, and the computer mouse are but a few of the most significant accomplishments derived from AFOSR-supported research.

Air Vehicles Directorate

Air Vehicles Directorate, headquartered at Wright-Patterson AFB, Ohio, leads the effort to develop and transition superior technology solutions that enable dominant military aerospace vehicles. The emphasis and vision are on technology investments that support cost-effective, survivable aerospace vehicles capable of accurate and quick delivery of a variety of future weapons or cargo anywhere in the world.

To achieve this, core technology areas focus on aeronautical sciences, control sciences, structures and integration. The scientists and engineers target advanced concepts to direct the development of aerospace technologies providing future capabilities in the areas of sustainment, air mobility, unmanned vehicles, space access and future strike.

Directed Energy Directorate

Directed Energy Directorate, headquartered at Kirtland AFB, N.M., develops, integrates and transitions science and technology for directed energy, to include high-power microwaves, lasers, adaptive optics, imaging and effects to assure the pre-eminence of the United States in air and space. Its people provide research and development for leading-edge space capabilities as well as techniques and technologies to transition optical systems to warfighting commands.

It is the Air Force's center of excellence for high-power microwave technology and the Defense Department's center of expertise for laser development. The Starfire Optical Range team conducts theoretical and experimental research in advanced tracking, adaptive optics, atmospheric physics and imaging of objects in space using large ground-based telescopes. The directorate also assesses potential applications and effects of systems using directed energy technologies.

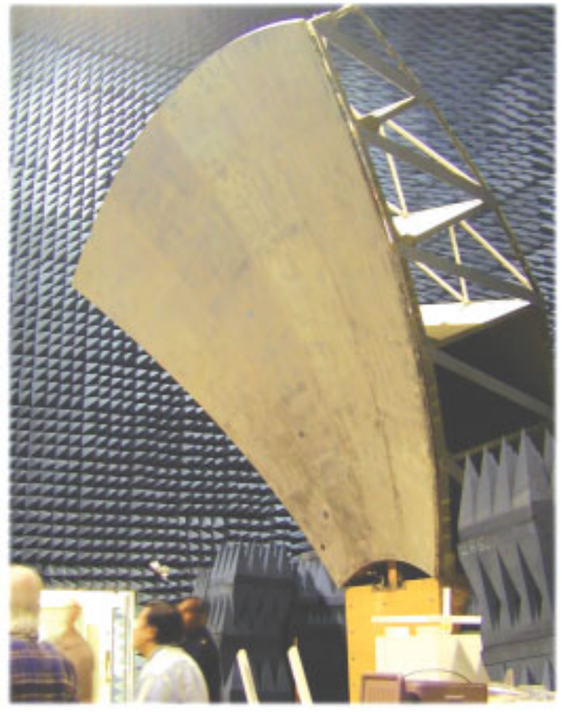
Human Effectiveness Directorate

Human Effectiveness Directorate is located at Wright-Patterson, with additional research facilities at Brooks AFB, Texas; Williams Gateway Park, Mesa, Ariz.; and Aberdeen Proving Grounds — Edgewood Arsenal Area, Md. The directorate mission is to provide science and leading-edge technology to define human capabilities, vulnerabilities and effectiveness; train warriors; integrate operators and weapon systems; protect Air Force people and sustain aerospace operations around the world.

The directorate has eight core technology areas: warfighter skill development and training, warfighter training simulation, information display and decision support, crew system design technologies, directed energy bioeffects, crew protection, toxic hazards effects and logistician effectiveness.

The directorate collaborates extensively with other laboratory directorates, other Defense Department services and federal agencies, universities, industry, and state and local governments to accomplish its mission. The directorate hosts the Joint Non-Lethal Weapons Human Effects Center of Excellence located at Brooks and technically manages the Human Systems Information

AFRL *continued on page 40*



Top: Firefighters test the combined agent firefighting system during an engine nacelle fire extinguishment evaluation at Tyndall AFB, Fla. AFRL is developing the new system for deployment with the Expeditionary Air Force. Bottom: The Electromagnetic Scattering Branch is implementing a bistatic compact range in its anechoic chamber at Hanscom AFB.

Top: Tech. Sgt. Robert Walker with the 96th Explosive Ordinance Disposal Squadron at Eglin AFB, Fla., makes final adjustments to an antipersonnel mine clearance device that is attached to an AFRL Information Directorate robotic all-purpose remote transport system. It is designed to provide explosive ordnance personnel with remote stand-off capabilities to perform landmine clearance operations. Bottom: A scientist uses a vein viewer with specially designed light filters allowing medical personnel to see infrarred light passing through a patient's body. (AFRL photos)

AFRL *continued from page 39*

Analysis Center at Wright-Patterson sponsored by the Defense Technical Information Center.

Information Directorate

Information Directorate, headquartered at Rome, N.Y., develops information technologies for aerospace command and control, and its transition to air, space and ground systems. Focus areas include a broad spectrum of technologies including information fusion and exploitation, communications and networking, collaborative environments, modeling and simulations, information assurance and defensive information, warfare and intelligent information systems technologies.

Directorate scientists and engineers develop systems, concepts and technologies to enhance the Air Force's capability to meet the challenges of the information age. The directorate has partnered with other elements of the federal government, national intelligence agencies, numerous allied nations, state and local governments, and more than 50 major universities to work on problems of common interest.

Materials and Manufacturing Directorate

Materials and Manufacturing Directorate, headquartered at Wright-Patterson, with an additional research facility at Tyndall AFB, Fla., develops materials, processes and advanced manufacturing technologies for aircraft, spacecraft, missiles, rockets and ground-based systems and their structural, electronic and optical components.

Air Force product centers, logistics centers and operating commands rely on the directorate's expertise in metallic and nonmetallic structural materials, nondestructive inspection, materials used in aerospace propulsion systems, sensor materials, laser-hardened materials, systems support and advanced manufacturing methods to solve system, expeditionary deployment and operational challenges.

Munitions Directorate

Munitions Directorate, headquartered at Eglin AFB, Fla., develops, demonstrates and transitions science and technology for air-launched munitions for defeating ground fixed, mobile and relocatable, air and space targets to assure pre-eminence of U.S. air and space forces. Its people conduct basic research, exploratory development and advanced development and demonstrations.

They participate in programs focused on technology transfer, dual-use technology and small business development. The directorate is dedicated to providing the Air Force with a strong revolutionary and evolutionary technology base upon which future air-delivered munitions can be developed to neutralize potential threats to the United States.

Propulsion Directorate

Propulsion Directorate headquartered at Wright-Patterson, with an additional facility at Edwards AFB, Calif., develops air and space vehicle propulsion and power technologies. Focus areas include turbine and rocket engines, advanced propulsion systems and associated fuels and propellants for all propulsion systems.

Its people are responsible for most forms of power technology, making it one of the nation's leaders in that field. Programs address both future systems and the need to keep current systems competitive, safe, affordable and effective. The directorate has contributed technology to more than 130 military and commer-

contributed technology to more than 130 military and commercial system.

Sensors Directorate

Sensors Directorate, headquartered at Wright-Patterson, with additional research facilities at Hanscom AFB, Mass., and Rome, N.Y., develops the new technologies warfighters need to find and precisely engage the enemy and eliminate his ability to hide or threaten our forces. In collaboration with other AFRL directorates and Defense Department organizations its people develop sensors for air and space reconnaissance, surveillance, precision engagement and electronic warfare systems.

The directorate's vision is to provide a full range of air and space sensors, networked to the war fighter, providing a complete and timely picture of the battlespace and enabling precision targeting of the enemy and protection of friendly air and space assets. Core technology areas include; radar, active and passive electro-optical targeting systems, navigation aids, automatic target recognition, sensor fusion, threat warning, threat countermeasures and protection of air and space systems.

Space Vehicles Directorate

Space Vehicles Directorate, headquartered at Kirtland AFB, with an additional research facility at Hanscom AFB, develops and transitions space technologies for more effective, more affordable warfighter missions. Its people leverage commercial, civil and other government resources that ensure America's defense advantage. Primary focus areas are radiation-hardened electronics, space power, space structures and control, space-based sensing, space environmental effects, autonomous maneuvering, and balloon and satellite flight experiments.

Top: The AFRL vision: "We defend America by unleashing the power of innovative aerospace technoloty." One of the Air Forces newest weapon systems is the B-2 Spirit, shown here soaring over Kansas skies. (Air National Guard photo by Staff Sgt. Mark Olsen) Bottom: First Lt. Wyatt Bora performs functions on the AFRL Information Directorate's interactive datawall. The datawall allows multiple users to have simultaneous access to a variety of real-time battlefield simulations and data displays. (AFRL photo)

Air Force Security Assistance Center

The Air Force Security Assistance Center at Wright-Patterson Air Force Base, Ohio, supports foreign military sales defense agreements with more than 90 countries and international organizations helping to sustain foreign military aircraft. This provides a worldwide alliance enhancing the security of the United States and its allies.

The Air Force Security Assistance Center at Wright-Patterson AFB, Ohio, negotiates foreign military sales generating more than $2.5 billion in revenue annually, including F-16 sales to both Portugal (top) and Greece (bottom). (Photos provided by AFSAC)

The Air Force Security Assistance Center, a specialized center under Air Force Materiel Command, provides program management and advocacy for international customers. This is consistent with national security policy, integrating the customer's security assistance and international cooperative programs. AFSAC's mission also influences the Defense Department acquisition and sustainment process and ensures effective use of financial resources.

Responsibilities

AFSAC's program managers negotiate foreign military sales, or FMS, defense agreements with more than 90 foreign countries and international organizations.

Part of FMS is sustaining foreign military aircraft, which AFSAC has been doing for 20 years. Combined, the countries have more than 9,000 aircraft ranging from the vintage C-47 to the modern Boeing 767 AWACS, providing a worldwide alliance that enhances the security of the United States and its allies.

The AFSAC commander is responsible for AFMC's international affairs. In this role, the commander is responsible for all international activities, including foreign military sales and security assistance policy, armaments cooperation with U.S. allies and foreign disclosure.

The commander also acts as AFMC's corporate leader for international business, and is the AFMC liaison to international Defense Department agencies, NATO, foreign embassies and Defense Ministry officials and United States and foreign industry.

AFSAC supports coalition warfighting activities by providing goods and services to friendly air forces that allow them to participate with U.S. forces in combined operations. By leveraging principles of interoperability and supportability AFSAC directly supports the CJCS Joint Vision 2020 concept for coalition operations and interoperability.

AFSAC generates $2.5 billion of revenue annually for the Defense Department.

Weapon systems supported

C-47, C-118, C-119, A-37, C-123, T-33, T-37, C-7, F-100, F-104, T-38, A-7, C-130, F-111, F-4, F-5, F-15, F-16, E-3 and AWACS 767

Budget

$29.4 million

Web Address

http://rock.afsac.wpafb.af.mil/

Top: A Saudi Arabian F-15 is able to take to the skies thanks to AFSAC's foreign military sales program. Bottom left: A Columbian soldier benefits from cooperative defense agreements managed by AFSAC. (AFSAC photos) Bottom right: Two Republic of Singapore Air Force F-5 aircraft taxi to the runway before taking off on mission in support of Cope Tiger '02 at Wing 1 Air Base Korat, Thailand. (U.S. Air Force photo by Tech. Sgt. James Lotz)

Aerospace Maintenance and Regeneration Center

The Aerospace Maintenance and Regeneration Center at Davis-Monthan Air Force Base, Ariz., has accelerated the delivery of 774 reclaimed aircraft parts to deployed forces in support of Operations Noble Eagle and Enduring Freedom; most notable was the shipment of F/A-18 horizontal stabilizers to satisfy a priority requirement for grounded aircraft. AMARC will continue to be a critical parts supplier for operational B-52H aircraft. Field teams performed vital non-destruction inspections and repairs on A-10 aircraft based at Osan AB, Korea; Eielson AFB, Alaska and Barnes Muncipal Airport, Mass.; without the inspections, aircraft may have been grounded. AMARC continues to withdraw aircraft in support of U. S. State Department foreign military sales negotiations with our allies, allowing the U.S. to achieve the goal of weapons systems interoperability in a combined forces environment. Currently, there are F-16s in storage identified for sale to the Royal Thai Air Force and lease to the Italian Air Forces.

Mr. Jack Hood, an aircraft electrician, works on the installation of an A-10 aircraft's global positioning system. Since the program's inception at AMARC, a total of 94 A-10 aircraft have been successfully modified and returned to service. (AMARC photo)

AMARC provides for long term aircraft storage, aircraft maintenance and asset regeneration for the sustainment of the Defense Department warfighter.

Responsibilities

Initially established as a storage activity for surplus aircraft at the end of World War II, AMARC's role has grown. Today its mission includes the storage of more than 4,500 aircraft, the reclamation of millions of dollars worth of parts to support ongoing flying operations and the regeneration of aircraft for operational use by our forces and for sales to our allies.

In fiscal year 2001, AMARC returned 113 aircraft and reclaimed 18,896 aircraft parts, valued at $887 million. Recent conflicts have elevated the necessity for AMARC to ship reclaimed parts halfway around the world to support our services in the worldwide commitment for peace.

Partnering with Ogden Air Logistics Center at Hill AFB, Utah, AMARC will continue to install a global positioning system on operational A-10 aircraft. AMARC is also reclaiming and shipping A-10 wing assemblies to Hill for refurbishment and eventual installation on operational A-10 aircraft.

AMARC stores and manages more than 320,000 line items of production tooling and special test equipment for future use in support of B-2, B-1B, A-10, C-5, C-141, F-4 and EA-6B aircraft. In support of Air Combat Command, AMARC continues to regenerate and successfully deliver F-4 aircraft for the full-scale aerial target, or FSAT program.

AMARC is the elimination site for heavy bombers under the Strategic Arms Reduction Treaty, and has successfully planned, managed, and supervised the elimination of 314 B-52 aircraft. K-12 saws were utilized for recent eliminations to "surgically" cut the outer skin, preserving parts to support operational B-52H aircraft. This center also supports specialized training efforts of the Air Force's aircraft battle damage repair and crash-damaged recovery teams, as well as the Defense Department and other federal agencies.

Weapon systems supported

AMARC's 508 employees maintain the specialized skills and knowledge necessary to work on more than 69 different types of model, design and series aircraft.

Area

2,600 acres.

Budget

$45 million

Web Address

http://www.dm.af.mil/amarc/index.html

Top: AMARC crews load a UH-3H Sea King helicopter into a NASA Super Guppy headed for Naval Air Station Roosevelt Roads, Puerto Rico. Bottom left: An AMARC mechanic makes a routine check of A-10A after a successful functional check flight. AMARC mechanics replaced all three wing sections with assemblies previously reclaimed from stored A-10 aircraft and refurbished at Hill AFB, Utah. Bottom right: U.S. Navy F-14 Tomcats, recent veterans of Operation Enduring Freedom, will be placed in desert storage as war reserve aircraft. (AMARC photos)

United States Air Force Museum

The United States Air Force Museum supports the warfighter by providing the public an intimate glimpse into the mission, history and evolving capabilities of the U.S. Air Force. Through its vast collection, sensory exhibits and informative and entertaining events, the museum encourages greater public awareness of and support for the Air Force's critical role in the nation's defense.

Top: A diorama of Lt. Col. Jimmy Doolittle, a B-25 and crew member on the deck of the U.S.S. Hornet. Middle: In 2001, the museum broke ground on a new facility scheduled to open in Spring 2003, coinciding with that year's Centennial of Flight celebration. Bottom: In March, 2002, the museum unveiled an exhibit honoring Bob Hope for his nearly six decades of entertaining U.S. troops. (Museum photos)

The United States Air Force Museum, Wright-Patterson Air Force Base, Ohio, preserves and presents Air Force and military aviation history to approximately 1.2 million annual visitors and the American public.

As the world's largest and oldest military aviation museum and the Midwest's largest free tourist attraction, the Museum employs visually dynamic exhibits, entertaining special events and informative educational programs to project Air Force heritage and illuminate the story of the people and campaigns that comprise the service's history. With more than 300 aircraft and missiles and thousands of artifacts, the museum showcases the stunning technological progression that has unfolded from the days of the Wright brothers to today's stealth age.

The museum complex is operated by the Air Force and falls under the operational control of the commander of the Air Force Materiel Command. The Museum staff of 96 civil service employees and about 400 volunteers works across a diverse spectrum of functional areas to help sustain the museum's reputation as an historical institution of international esteem.

The museum hosts a variety of special events and educational programs to connect the public to the rich history of the Air Force and of military aviation. Examples include the World War I fly-in, giant scale radio-controlled fly-in, behind the scenes tours, family day and the "Wings and Things" guest lecture series. Through its Education Division, the Museum reaches more than 50,000 students, teachers and adults annually with interactive activities, teacher workshops and outreach and tour programs.

In 2001, construction began on a 200,000-plus square-foot third building, the centerpiece of a major museum expansion. The hangar is scheduled to open in 2003, coinciding with a variety of events at the museum to commemorate the Centennial of Flight celebration. Other more long-term expansion includes a hall of missiles, a space gallery and an education center.

The museum also received a B-2 stealth bomber in 2001. The museum's restoration division is currently working to prepare the aircraft for a targeted 2003 rollout. When the B-2 goes on display, it will be the first permanent public exhibit of a B-2 anywhere.

On Display

— More than 300 aircraft, missiles and thousands of artifacts
— More than 10 acres of indoor displays
— Memorial Park (more than 400 statuary memorials/plaques)
— IMAX Theater with a six-story screen and a seating capacity of 500

Admission

Admission and parking are free. The Museum is open daily from 9 a.m. to 5 p.m.— closed Thanksgiving, Christmas and New Year's Day.

Web Address

http://www.wpafb.af.mil/museum/

Air Force Reserve and National Guard

Members of the Air Reserve Component — comprised of Air Force Reserve and Air National Guard units and individuals — are crucial to making the Defense Department Total Force policy work. Air Force Materiel Command relies heavily on reservists who are part of the Air Force Reserve Command's Individual Mobilization Augmentee program. During normal operations, IMAs take over positions deployed active-duty members leave behind. When there is an increased operating tempo, such as with Operations Noble Eagle and Enduring Freedom, IMAs step up to handle the increased workload — even if the active-duty members to whose offices they are assigned are not deployed. Most reservists, whether they are IMAs or assigned to Reserve units, are former active duty members and bring a wealth of knowledge and experience to the job. More than 766 Air Force Reservists and Guardsmen assigned to AFMC have been mobilized since September 11, 2001, in support of America's war on terrorism and to perform homeland defense duties.

The Air Force Reserve (Individual Mobilization Augmentees) and the Air National Guard provide trained individuals and unts to accomplish tasks in support of national objectives, peacetime missions and mobilization readiness.

Air Force Reserve (AFMC)

Unit	Officer	Enlisted
Arnold	1	
Brooks, 311th HSW	7	22
Edwards, AFFTC	64	75
Eglin, AAC	79	166
Hanscom, ESC	110	68
Hill, OO-ALC	120	327
Robins, WR-ALC	86	224
Tinker, OC-ALC	100	148
Davis-Monthan, AMARC	11	1
HQ AFMC	96	15
ASC	175	42
AFRL	185	6
Total	**1034**	**1094**

Air National Guard (AFMC)

Unit	Officer	Enlisted
130th EIS Salt Lake City	10	143
202th EIS Macon, Ga.	9	132
205th EIS Oklahoma City, Okla.	10	141
210th EIS Minneapolis, Minn.	7	103
211th EIS Indiantown Gap, PA.	8	107
212th EIS Milford, Mass.	9	104
213th EIS Stewart ANGB, N.Y.	8	101
214th EIS New Orleans, La.	8	116
215th EIS Everett, Wash.	8	123
216th EIS Hayward, Calif.	10	103
217th EIS Springfield, Ill.	7	112
218th EIS St. Louis, Mo.	10	117
219th EIS Tulsa, Okla.	9	106
220th EIS Zanesville, Oh.	10	116
241th EIS Chattanooga, Tenn.	9	112
243th EIS South Portland, Maine	8	125
270th EIS Willow Grove, Pa.	9	104
272th EIS LaPorte, Texas	9	97
273th Beaumont, Texas	8	100
Total	**166**	**2162**

Top: A B-2 Spirit from Whiteman AFB, Mo., pulls up for a fill-up with a Air National Guard KC-135 Stratotanker. (ANG photo by Staff Sgt. Mark Olsen) Bottom: President George W. Bush shakes hands with members of the Guard and Reserve in the Pentagon following a recent meeting of his National Security team. Bush has authorized the call-up of 50,000 Guard and Reserves to augment active duty forces. (Defense Department photo by Tech. Sgt. Cedric Rudisill)